

### THE NEW MUSEUM IN THE ORTO BOTANICO, ROME.

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A NEW centre of archaeological interest has recently been inaugurated in Rome, in the so-called *Orto Botanico*, between the Colosseum and the Church of San Gregorio, on the *Calian Hill*. The new building, although modestly called *Magazzino Archeologico*, is, in fact, a museum of great value to students interested in the origins and prehistoric life of Rome. My special object in proposing the organisation of this collection, and in arranging it has been this: If at some future time the city should decide to collect in this new institution all the treasures discovered in Rome since 1870, which are now dispersed in various places, no part of the work will need to be done over again. The galleries opened on 7th May are only six in number, but they form part of a grand scheme carefully prepared and studied in every particular, so that no alteration will be required in case of future additions. Let me add that the building is surrounded by a garden, to which architectural monuments, falling on the line of new street and river improvements, can be, and are, bodily removed. If we consider, furthermore, that the *Orto Botanico* is one of the few shady recesses of modern Rome which have escaped "civilisation," that its charming and old-fashioned groves are enclosed by such monuments as the Colosseum, the *Claudium*, the Palaces of the *Cæsars*, the Churches of St. John and St. Paul, and St. Gregory on the *Calian*, and that the hum of the great city hardly reaches this secluded corner, we must acknowledge that no better site could have been selected for the new museum.

One gallery is devoted entirely to building and decorative materials; the second and third to monuments contemporary with the foundation of the city, or, at all events, anterior to the building of the *Servian walls*; the fourth to inscribed or sculptured monuments of the Republic; the fifth to miscellaneous sculpture; the sixth to objects pertaining to the aqueducts and water-supply of ancient Rome.

The first abovementioned is the one best calculated to impress the student of architecture, and to its contents I propose to direct the special attention of my readers. The scheme is to collect in this gallery—(1) samples of building materials used in Rome from the time of the construction of the *Palatine walls* to the downfall of the Empire; (2) specimens of actual construction in brick and reticulated work, in *opus quadratum*, &c., taken from buildings of ascertained date; (3) marbles used for decorative work. This last collection includes some unique specimens—for example, the *breccia di Villa Casali*, so named from the place of

discovery; the breccia di Villa Adriana, a large block of *Rosso di Levanto* from the theatre of Balbus, a marble which till now was thought to be unknown to the Romans, &c.

There are special divisions in this gallery for the illustration of various other branches of mechanical and architectonic handicraft. The best, for every reason, is the one illustrating the work of the *figulus* (potter and brickmaker). Beginning from the diminutive bricks used for the pavements of *opus spicatum*, and from those of middle-size used for the construction of hypocausta, there are seen all the varieties in shape, in weight, in colour, produced by the imperial and private *figlinæ*. There are square and round pipes for the distribution of hot air, round bricks used for building columns in the so-called Pompeian style, triangular bricks for facing (*cortina*), tiles three feet square, chimney-tops, hearths, tools used for brickmaking and for mason's work, and even specimens of rope and of a workman's apron. This last, made of coarse canvas, was found embedded in concrete in the foundations of one of the buildings in the Gardens of Sallust.

Another division illustrates the stonecutter's work, and shows how the hardest kinds of marbles, as well as basalt and porphyry, were cut and mouldings formed on them; what kind of silicious sand was used for the purpose; what saws, what chisels, and so on. The remaining sections refer to the trade of the carpenter, the painter, the locksmith, the moulder in stucco and terra-cotta, the brassfounder, and others. The exhibition of earthenware is truly remarkable: there are bath-tubs 8 feet long, shafts of wells 2 feet 4 inches in diameter, washing troughs, sitz-baths with a small furnace to keep the water hot, *dolia*, or jars, of 25 amphoræ capacity, fountains, tanks, basins, amphoræ, coffins, altars, &c. Two sides of the gallery are occupied by a collection of brick-stamps, the largest ever made, giving the consular date of the year in which the material was produced, the name of the potter, and of the owner and manager of the *figlinæ*. These stamps were generally impressed in the soft clay by means of a seal cut in boxwood or cast in metal; a few, however, are hand-written, or rather *graffiti*, scratched with a nail or with the point of a stick. One of the bricklayers must have been a poet and a scholar, as his tile is inscribed with the first verse of the *Æneid*.

The description of the specimens in Galleries I., II., III., IV., and V. pertains more to an archaeological than a technical paper.\* The sixth, however, is of great interest both to the architect and the engineer, as it contains objects connected with the water-supply of ancient Rome. The oldest and most curious are the tubes used for the distribution of the Aqua Marcia in the third century before the Christian era. They are hollowed out of oblong blocks of peperino or tufa, from four to five feet in length, and two feet square, the round bore being only eight inches in diameter. The blocks telescope into each other with marvellous accuracy, the joints being also cemented with a mixture of plaster and oil. This primitive tube was carried across the Esquiline and the Cælian, from the neighbourhood of the Porta San Lorenzo, to the temple of Claudius, a distance of over a mile. The first step towards improvement was made by the substitution of light clay pipes (embedded in concrete) for the clumsy old peperino blocks. Some of these terra-cotta tubes are one foot in diameter and three feet long; they also telescoped into each other, and were lined with the same quality of stucco. Lead pipes come generally in use towards the end of the Republic. There are some three hundred specimens in the collection, all inscribed with the name of the owner and of the plumber—a precaution necessary in case of repairs, as hundreds of pipes must have run in a tangle under each street of the city. The largest lead aqueducts yet discovered in Rome ran from the great reservoir at the Porta Viminalis (by the modern railway station) to the forum of Trajan, a distance of 2,350 metres. The tube weighs one quarter of a ton per metre. There

\* A description of the contents of these galleries is given by the Comtesse Florence Gautier, in the August number of *The Antiquary*, under the title of "A New Museum at Rome."

is also in this gallery a collection of keys and regulators and spikets to increase or diminish *ad libitum* the supply of water: they are cast in bronze, and so is a pump with double action—a probably unique specimen. The artistic and æsthetic side of the collection is represented by a set of marble fountains, the characteristic ornaments of which are figures of cupids gently put to sleep by the sound of the falling waters. These Roman waters were not all pure and wholesome: the Alsiatina and the Anio Vetus were only used for irrigation, and for cleansing of the sewers; while the Marcia and the Virgo were alone absolutely free from impurities. The fact is confirmed by the exhibition of the deposits and incrustations with which the various pipes are choked. When this Museo dell' Orto Botanico is completed I feel sure that the architect and the engineer, as well as the student of Roman art and antiquities, will find in it ample and new subjects for investigation.

R. LANCIANI.

#### NOTES ON SOME AFRICAN STRUCTURES. BY MR. J. T. LAST, F.R.G.S.



THE study of the form and construction of houses or dwelling-places is an important item in the acquirement of a knowledge of the people who inhabit them. This is especially the case with the natives of East and Central Africa. Here one may meet with every description of dwelling, from the primitive forest shelter, passing on through stages of more or less permanent structures to the large, stone-built, flat-roofed houses of the Arabs who

live on the coast. The kind of house in use points very distinctly to the mode of life and habits of the occupier; as, for instance, the little "lean-to" shelter, or the small round grass hut, discloses the owner as one who is a traveller, and not a settled resident in the country. The semi-permanent huts of the Masai indicate a nomadic people who wander about with their flocks and herds, resting wherever they can find suitable pasture. A village of well-plastered and somewhat substantial-looking huts shows that the natives have settled for the wet season, and will remain till after the rains are over. The insecure bush-fence round the village implies that the people are ever on the alert, and that they will not be afraid to stand up in defence of their own. The strong, square, fort-like tembe points to a tribe permanently settled in the country, people who occupy themselves both in agriculture and cattle-keeping, and who, if attacked, prefer to fight behind a shelter rather than fearlessly in the open like the Masai. The circular hut in all its varieties may be said to be the common dwelling of the agriculturist, and the square-shaped building the home of the trading native, the coast man, or natives who have visited the coast and adopted some of the customs in vogue there. The internal arrangements of the houses are well worthy of close observation and study, for from them considerable knowledge of the modes, habits, and customs of the people may be learned.

The Masai houses are generally built about 6 feet high, 6 feet or more wide, and about 8 to 12 feet long. Some are simply conical huts, with diameter about the same dimensions as the height. A framework of slender withes is formed and bound together, as shown in

the drawing fig. 1. This is thatched with grass; then bullock hides are laid on; and finally the whole is covered over with cattle-dung. This is smoothed down by hand, and as it dries it becomes very hard and tough, and makes the roof perfectly watertight.

There is great variety in the shape of house used by the people of East Africa. Some are of the most primitive design, others are more elaborate and form quite comfortable dwellings. Considerable skill and artistic taste are also frequently shown in the manner in which the outside walls of the houses are ornamented with the blackened bamboos.

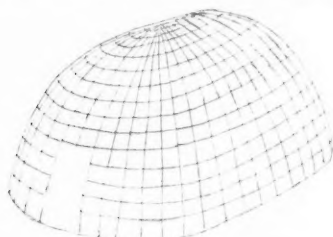


FIG. 1.—FRAMEWORK OF MASAI HOUSE.



FIG. 2.—SHELTER, FOREST CAMP.



FIG. 3.—TRAVELLERS' GRASS HUT.

The simplest form of building is that shown in the sketch fig. 2. A few poles are placed on the ground, cross-poles are laid on the top of these, and from them others extend sloping to the ground; on these a covering of small boughs, leaves, and grass is placed; the ends of the house are blocked up with sticks and grass, and the work is finished. Buildings of this kind are used by natives in their gardens occasionally, but generally they are found by the roadside occupied by caravans of men travelling on a long journey.

Fig. 3 is also a very temporary structure, chiefly built and used by Swahili, Wanyamwezi, and other native porters in caravans. They are built about 4 or 5 feet high, and some 7 feet in diameter. Six or seven men are able to sleep in one of these small huts. They find it fairly warm, but generally they can do with a good amount of heat and smoke.

Fig. 4 represents a house as used in the Nyika country, the district around Mombasa, on the East Coast of Africa. They are built about 8 feet high by 10 feet wide, and may be as



FIG. 4.—NYIKA HOUSE.

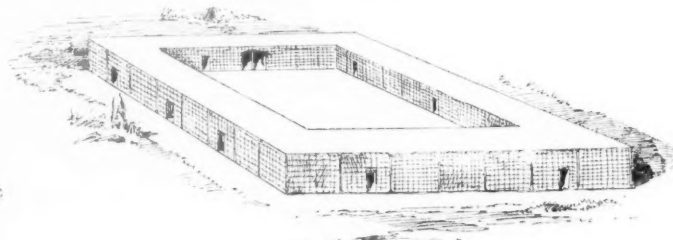


FIG. 5.—TEMBE OF UGOZO.

much as 15 feet long. Sometimes they are divided into two or more compartments. The framework is made of slender poles bound together with withes and forest vines, and all is covered with a thick thatch of grass which extends to the ground.

Fig. 5 is the "tembe," a kind of building used over a large tract of country extending from Usagala to Lake Tanganyika. The walls of these buildings are from 6 to 7 feet high. The framework is made of poles bound together with withes and sticks, after which the whole is covered inside and out with a thick coating of clay. The distance between the two walls may be 8 or 12 feet; if the latter, an extra row of poles is set up midway to help to support

the roof. The roof is formed by throwing beams over from wall to wall, these being covered with smaller wood, boughs, and grass. A thick coating of clay and gravel is then laid over the whole. In some cases the outer walls are very neatly plaited together with slender withes, forming a kind of wickerwork; in such a case only the inner walls are plastered with mud, the outer being left bare. Buildings of this kind are chiefly found in those districts

which are subject to frequent raids from the surrounding marauding tribes, the space enclosed being used for housing the cattle at night.

In fig. 6 we have a sketch of the style of house in use among the Sango and Zori tribes. I first came across this

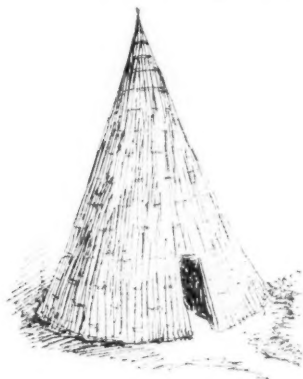


FIG. 6.—SANGO HOUSE.



FIG. 7.—SAGALA HOUSE.



FIG. 8.—MAKUA HOUSE.



FIG. 9.—MAKUA HOUSE, NAMULI.

kind of house in the South Sagala country, where some Sango people had recently settled down. A circle of poles is set up and made to meet at a common point above. These are bound together with forest rope and cross-sticks, and then thatched with grass which reaches to the ground.

Figs. 7, 8, and 9 represent the various forms of the African round hut. The Sagala house is the most common form met with. The bell-shaped roof is found among the Namuli hills in the Makua country, and also among the Yas tribes. The Wanyamwezi and other distant inland tribes construct a much larger kind of round house; sometimes the centre pole is 25 feet or more in height, and very frequently a wide open verandah is found all round the house. Makuas also build a similar house with open verandah, but not so large. Inside these round houses a second circular wall is generally built which reaches to the roof. The central space enclosed is used as a sleeping-room, and always has a fireplace of three stones let into the floor at the foot of the sleeping-place. The space between the two walls is used for cooking purposes, stowing away goods, and housing a few goats, sheep, fowls, and any other live-stock the natives may have. The walls of these houses are strongly built of stout poles bound together with smaller sticks or split bamboos, and then covered with mud, being plastered inside and out. Frequently also the whole of the roof is covered with a kind of wickerwork, then thickly plastered over with mud, and finally thatched with grass. This roof-plastering is done to preserve the house in case of fire. Here the rats take up their abode. Occasionally the natives take off the thatch and have a rat-hunt. This is invariably followed by a feast, for the natives do not believe in throwing the rats away.

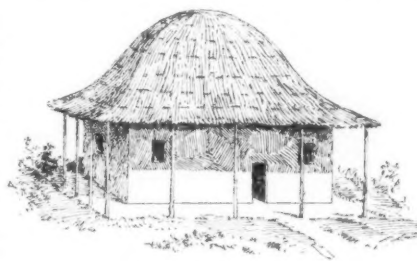


FIG. 10.—LOMWE HOUSE.

Fig. 10 represents a Lomwe house. The builders of these houses occupy the banks of the Lukugu river, which rises in Namuli. It is, I think, the finest and most comfortably arranged





Considerable ingenuity is exercised in the arrangement of the space in the circular huts [fig. 12]. The inner wall divides the space into two parts. In the central part a kind of raised dais some 6 inches or a foot above the floor is made to answer as a sleeping-place. This sleeping-place is often enclosed at its sides by walls some 4 or 5 feet high, the spaces between these and the inner circular wall being used for storing corn and other effects. The enclosed space between the two circular walls is generally divided into three separate compartments, each having a doorway in the outer wall, and another leading into the inner room. The different compartments also communicate with each other by small doorways in the partition walls. In the construction of a round house the builder has to consider two things chiefly, namely, to make the best of the space at his disposal, and to so arrange it as to ensure all possible means of safety and ability to escape from the house if pressed by enemies. The prominent idea in a builder's mind when he is arranging his doorways and outlets is how far they will afford him a means of safety, or of dodging and escaping from an enemy.

Fig. 13 shows the ground plan of a smelting-house as used by the Wa-itumba people of East Africa. There is a little variety in the construction of these "nyanja," or smelting-houses. In some cases the roof slopes down to the ground, and is thickly thatched with grass on all sides. In this case a long tunnel-like passage some fifty yards or more long, and 6 feet high by 6 feet wide, is built leading

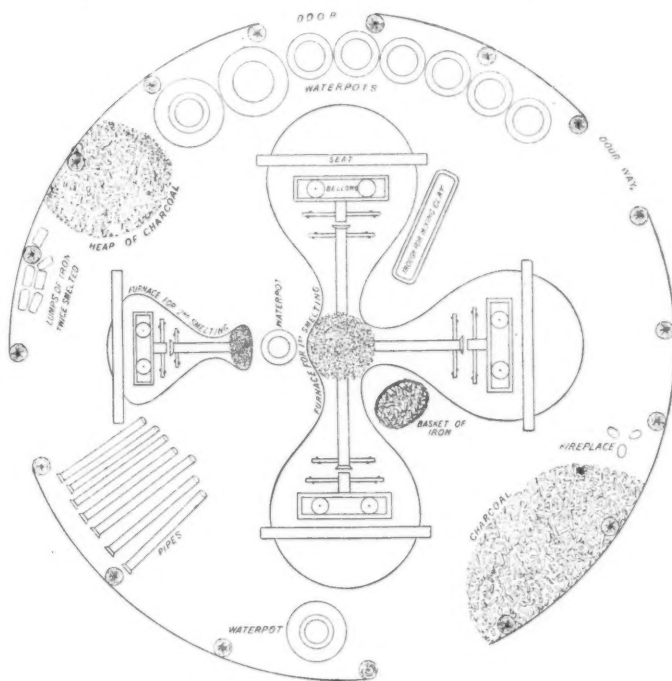


FIG. 13.—PLAN OF "NYANJA," OR SMELTING-HOUSE, USAGARA, EAST AFRICA.

up to the nyanja. This is arranged so as to form a kind of shaft to the smelting-furnace, and produces a great draught. Houses of this kind are found among the Wa-Comwe, who live at the foot of the Namuli Hills in Makuani, East Africa.

A description of the manner of mining, smelting, and working the iron may be of some interest, so I give it as I saw it in operation on the Itumba Hills in East Africa. These hills were once inhabited by an extensive tribe, which through intrigue and the requirements of the slave trade is now almost exterminated. The deserted gardens and ruined village sites show how great a tribe once occupied these hills; now the villages are few, small, and scattered far apart. Of the men still remaining most of them are of good height, and are strong and muscular. This is probably owing to the toilsome work of blowing the bellows and pounding the iron with heavy stones. In appearance they have very much in common with the sooty foundrymen and blacksmiths of our own country; and as the artisan and mechanic at home are

generally quicker in perception, clearer in thought, and more ready of wit than the agriculturist, so these Itumba iron-smelters and blacksmiths are far superior to all the surrounding agricultural tribes in acuteness, ingenuity, and banter. These men are almost exclusively engaged in working iron—that is, smelting and working up the metal into hoes and other implements. The first process is digging and cleansing the ore. This work is generally done by the women. On the hill-sides there are three places where the ore is found: according to report, and judging from the cheapness at which hoes were formerly bought, they must have been far more plentiful than they are at present, and iron must have been produced in far larger quantities. It is just possible that the natives formerly dug deeper into the earth, and so obtained the ore more plentifully. Now it seems that the people never dig beyond two feet into the ground, where there is a layer of red clayish sand in which the particles of ore are found. It produces probably about 5 per cent. of ore. The workings I visited, to judge from the broken nature of the ground, were probably on the site of some very old excavations. A stream of water some four gallons per minute had been brought down in a gutter to the seat of work, then a series of little pits had been made in a row, each one lower than the other. These were about 3 feet in diameter and some 10 feet apart. The water from above was guided so as to fall into each of these pits successively, out of one into the other. The sand containing the ore is put into these pits, and washed over and over till all the loose sandy matter has been carried away by the water, and the iron ore and small stones left at the bottom. These are then taken out of the water pans and put in the sun to dry; when dry they are placed, a little at a time, in a kind of fan (*ungo*), and fanned, after the old-fashioned manner of winnowing corn in England; the stones being lighter than the small pellets of iron, they come to the front, and so are separated. The stony part is laid aside ready for a further cleansing. The iron ore which has been obtained is put away into bags made from the fronds of the fan-leaved or the date palm, when it is ready to be sold to the smelters. In this state the iron ore is called “*mudapu*.”

The spot where the *mudapu* is found is generally considered to be the property of the chief of the district, and he works it with his own people. The ore is sold at the rate of its equivalent in bulk of clean corn. Some of the buyers come a distance of twenty miles or more. These take it home, the women reclean it by the fanning process, and it is ready for the furnace. The next thing is to prepare an abundance of charcoal for the furnace. For this a number of men go out into the forest and cut down the trees required. These are cut into logs some 5 or 6 feet long; a place is cleared on the ground; grass, small sticks, and branches are laid first, then the logs are packed in a pile some 10 feet square and 6 feet high. The pile is set alight and carefully tended till all is reduced to charcoal. When cool it is broken up so that the largest pieces are not more than 2 inches in diameter. This is then very cleverly packed in grass and conveyed home. Some wire-grass, of the kind called “*lukoka*” (very much like wire-grass at home), is placed on the ground, and the charcoal heaped on it. Then the ends of the grass are drawn together and tied, after which the whole bundle is tied together with a creeping plant used as a cord: in this manner it is carried home to the *Ujanja*. The *mudapu* and *makala* (charcoal) being ready, the next thing is to arrange the pipes (*kelwa*) and the bellows (*mirrikuto*). The pipes are made of clay moulded on a bamboo (*mgwami*). They are about  $2\frac{1}{2}$  inches in diameter and some 5 feet long, having a lip round one end. The bellows are made of wood, with a tube of the same material, the top being covered with a piece of skin, with a stick as a handle projecting from the centre. When these are arranged a fire is made in the centre of the pit. As soon as the fire is of sufficient force a double handful of ore is taken and dropped lightly into the fire followed by charcoal. When this is fairly through with a red heat more charcoal is added, followed by two double-handfuls of ore, which is covered with a little more



charcoal. The furnace is now in working order, and about every twenty minutes more charcoal and iron ore are added. The proportion is generally two of ore to eight of charcoal. An incessant blowing is kept up from three sets of bellows by a man and boy at each set, where they work by turns. This is maintained from the time the fire is lighted till all the ore is put into the furnace. Towards the end they diminish the amount of ore put in and add more charcoal. As the heap of iron ore and charcoal increases in size in the furnaces the pipes from the bellows have to be raised so as to be kept just below the surface of the melting mass. When all the ore is melted the furnace is left for about half an hour, when two or three earthen pots (mabiga) of water are thrown over the mass. The loose charcoal is then removed from around the mass of iron, and a strong cord made of kongi grass is passed round it, with which it is hauled out of the pit and left to cool. In this state the iron is very much like a large lump of blacksmith's "slag" or "hards." Generally these lumps are from 15 to 18 inches in diameter and from 2 feet to 2 feet 6 inches in length. After being taken from the pit the lumps may be left any length of time before the process is carried further. Generally large numbers of lumps are made as stock to work from. When ready the iron lumps are broken up with an iron hammer, made by the native blacksmith, into little pieces, none of them larger than a walnut. These pieces are then re-smelted in another furnace, which is served only with one set of bellows. A fire of charcoal is made in the pit. When sufficiently hot, about two handfuls of iron are dropped in with a little charcoal. After this is melted more iron is added gradually till about eight or ten pounds have been put in; it is then covered with charcoal and heated until the iron has become a fairly compact mass. When it is well melted, and the charcoal amongst the iron consumed, the outer charcoal is poked away with a green stick. The lump of iron is seized with a large pair of tongs and conveyed to the anvil, where a man stands ready to pound it into a solid mass. The anvil is a large stone, and from its appearance one might judge it had been in use for years; the hammer is a lump of iron about  $2\frac{1}{2}$  inches square and 5 inches long, with a hole in the middle for inserting a handle. The iron is now ready for the blacksmith, who is generally the chief both of the village and the smelting-house.

Though the iron has been smelted twice it is still very porous, so that the blacksmith has first to heat the lump very hot, then whilst he is holding it with his large tongs another man pounds it into a more solid mass with a large stone. The spike part of the hoe is hammered out from one end of the lump, and the blade from the other part. All the pounding is done with different-sized stones, except the last finishing touches. The hoes vary in size according to the lumps of iron from which they are made; the largest are about 8 inches across the blade. The hoes are used by inserting the spike through a hole in the end of a handle some 5 feet or more long. All the blacksmiths' work here is done in the open air, but in many places a special shed in the village is set apart for such work. J. T. LAST.

Mr. William Simpson [H.A.], R.I., writes in reference to the foregoing Paper as follows:—One evening during the summer I was invited to a friend's house to meet Mr. Last, who had made explorations in Africa for the Royal Geographical Society. An important Paper of his appeared in the Society's *Proceedings* of April 1890, with an elaborate map of Eastern Africa, prepared from Mr. Last's surveys. In conversation he described to me how the natives, in the places he had explored, constructed their dwellings, and I was interested in what he said about the form and manner in which the people of the Masai country built their huts, from their resemblance to the huts of the Todas, in Southern India, which are described in a Paper of mine read before the Institute in 1891.\* This led

\* TRANSACTIONS, Vol. VII. N.S. pp. 248, 249. See also, p. 313 *ante*, a Note (with illustrations) by Mr. Simpson on Huts found at Trani and Bari, in Southern Italy.

me to inquire of Mr. Last if he would make me a sketch of the Masai huts and add a few notes, which he kindly promised to do. As our conversation chanced to widen out about other huts, and into the manufacture of iron by the Africans, he made his notes and sketches to include them all.

The ideas and customs of man in his early conditions are now being studied by the folklorists, comparative mythologists, and other followers of scientific methods in a manner that had not been done before, and the results have been of great value. Although such has been the case with these investigators, it may be doubted if the student who is in search of origins in architecture will derive the same benefit from the constructive efforts of man in his more primitive state. Still, it must be evident that this is a point that cannot be fully determined until every investigation has been gone through—and that will take time. Meanwhile, however, the foregoing Paper will serve as a slight record of what man builds for himself while in one of his rude phases of development. For my own part I should say that we ought to have more details of this kind, for the double purpose of reference and for recording such primitive efforts. The latter may now soon disappear, as Mr. Last's Paper shows that a more developed style is already encroaching, from the Mohammedan influence, upon the older forms of construction in Eastern Africa; and the increase of European emigration, which has already begun, may in a few years wipe out both the African and his architecture.

The origin of the barrel-roof of the Chaitya cave in India, as suggested in my Paper, was derived from representations of the Toda *mands*, or huts; the change implied in this theory of origin is considerable, and the long period of time implied in the development prevents one from speaking of it as an idea which is established beyond a doubt. All that can be said is, that as yet it is the only suggestion of origin for this peculiar roof which has been produced. In the huts of the Masai we have a similar form of roof, and produced by a method of construction closely allied to that of the Todas. These houses of the Masai have another feature in their construction which is repeatedly mentioned in the cuneiform inscriptions. Mr. Last says that the roof is first "thatched with grass," then bullock hides are laid on, and that such a roof is "perfectly watertight." In the *Annals of Sargon* that monarch is made to say: "I built in the town palaces covered with skins."\* This statement is often repeated in the inscriptions, and I give a few of the references to them in the foot-notes. In some cases "skins of sea-calves" are mentioned, and a note by Professor Julius Oppert will be found,† in which he thinks it was either buffalo or bear-skins that were used; but there is also a "*sea-amsi*" mentioned, and he thinks it was "the skin of a *cetaceum*." It need scarcely be recalled that skins formed part of the covering of the Tabernacle. This suggests an interesting question, as to how far skins have been employed for roofing in early times.

The plan of the Circular House which Mr. Last supplies, showing how a primitive man arranges for his domestic wants, is particularly interesting; and it may be of use in tracing the purpose of more developed structures. The same may be said of the Smelting-house; I have seen quite as rude a process in the Himalayas as that described by Mr. Last. The use of iron or metal opens up a number of questions. Some years ago the question of the date when iron began to be known was a subject of discussion; it became, if I remember rightly, an Homeric question, as the *Iliad* was often referred to in relation to the value of iron among the heroes of that old poem. Now, if people in the condition of civilisation of the African races can make iron, it would be reasonable to suppose that iron must have been known among the more civilised people long before the time of Homer. Metal as an architectural material was recognised and in use long before the present "Iron Age." With the Greeks it was bronze and not iron; with them it was largely used in combination with wood. The same may be said of the Phœnicians. The Temple of Solomon had a large quantity of bronze about it. The Africans have not yet reached a development in their building that requires metal; their condition has not advanced to a settled state that requires permanent structures. Withes, branches, posts, grass, thatch, mud, and, we may suppose, wattle-and-dab are their architectural materials. The constant movement of tribes from one place to another, owing to raiding and fighting, prevents anything but the most temporary kind of habitation being erected. If time were allowed them to consolidate their organisation, so that large towns and more durable houses could be built, the knowledge of the smelting process would naturally lead to the use of iron or other metals; but this is just the condition that Mr. Last's Paper shows the people of Africa have not yet attained in their structural efforts.—WILLIAM SIMPSON.

\* *Records of the Past*, vol. vii. p. 54. See also p. 52. Vol. ix. p. 18; vol. xi. pp. 21, 33, 34, 36, 40.

† *Ibid.* vol. xi. p. 34.



### CHRONICLE.

#### The late Wyatt Papworth [F.].

The funeral of Wyatt Papworth was solemnised at Highgate Cemetery on the 23rd ult., where, in spite of the heavy downpour of rain, a large number of mourners assembled. Besides the two sons of the deceased and several of their relatives, there were present Mr. Arthur Cates [F.], Mr. C. Forster Hayward [F.], Mr. George Low [F.], Mr. F. R. Meeson, and Mr. P. Gordon Smith [F.]; and the Institute, in the unavoidable absence of the President and Hon. Secretary, was officially represented by the Secretary.

#### The Condition of London Streets.

That the maintenance and management of certain of our metropolitan streets are susceptible of improvement few will be disposed to deny. The *stercus odorifera colluviesque via* of the West End, of which Lord Randolph Churchill complained in a letter to *The Times* some two or three months ago, continues unabated; and, judging from the number of letters which lately appeared in *The Morning Post*, in whose columns this and other grievances of long-suffering Londoners have been well ventilated, no steps have yet been taken to remedy the nuisance. Needless to say, the vestries, ever open to attack, come in for their share of criticism, although it really seems that, in some quarters at any rate, these much-abused bodies have done their utmost, by diligent scouring and cleaning and the free use of chemicals, to render the streets less malodorous, and to minimise as far as possible the other evils complained of.

The present system of road-making in London, despite the vast sums of money expended, it is to be feared, is hardly a satisfactory one. It is open to doubt indeed whether wood is the best material for paving. The wooden blocks being porous, after a few weeks' traffic the surface becomes saturated with a sort of concentrated essence of manure; and a shower of rain or the passage of the water-cart converts the road into what is practically little better than a shallow cesspool. Asphalt, though in a less degree, is open to something of the same objection. The danger to health

through the polluted atmosphere is not the only evil to be reckoned with. The slippery condition of the streets is a constant menace to life and limb of both man and beast, as the numerous accidents daily testify.

Mr. W. Sowerby, an engineer who contributed a very sensible letter to the discussion in *The Morning Post*, avers that we have lost the art of road-making—lost it with the world's greatest models before us. For the better regulation of the streets he suggests that tracks should be laid down with smooth slabs of suitable width and gauge for the wheels of vehicles, the space between for the horses' feet being paved so as to give good foothold. Where the width of the road would admit, there might be four tracks, two for slow and two for quick traffic. Such tracks could be laid so that vehicles might pass off and on freely even at the crossing of the streets. The system is the old Roman road, such as may be seen in several parts of the country, especially in Chester, and as at present existing still in Rome, Milan, &c. The first cost, Mr. Sowerby maintains, would not be more than the present system, and the expense of repairs would be very trifling, as once well laid they would be most durable. The present objectionable tram-roads with flanged-wheels could then be entirely dispensed with, as every road would be a tram-road, and every vehicle a tram-car. It would also be suitable for country roads, instead of expensive iron tramways such as have been lately so much discussed by County Councils.

One correspondent, remarking upon the absence of gutters in wooden pavements, recommends that they should be provided with cement gutters, which, with curved sides and rounded edges, might be deep without being dangerous. Refuse could be swept into these gutters and then washed away, as is the practice in Paris; this would further obviate the rotting away at the edges which is now so apparent.

Although perfectly willing to admit that the local municipal authorities have had a certain success in their efforts to keep disease from penetrating the bodies of the vast majority of Londoners, it is certain that the present methods of sweeping and cleansing the streets leave much to be desired. Boileau satirised the Paris filth of his day in the memorable couplet—

Elixir d'excréments pourris,  
Maudites crottes de Paris!

and if the reader will substitute "London" for "Paris," the quotation will afford an accurate description of every metropolitan roadway even in the haunts of fashion in the very middle of summer. Take, for instance, the majority of subordinate wood or asphalt roadways in the neighbourhood of Grosvenor and Portman Squares. The formula for cleaning them is this: On a fine morning the

dust, mainly composed of horse-dung, is carefully swept into the gutter on either side of the way; and an hour or so later a water-cart sprinkles sufficient water over the sweepings to render them moist, if not absolutely to convert them into mud. In due course the sun, fooling with the London fog, begins to dry the moistened manure, which, towards afternoon, is caught by the metropolitan breezes and carried away in the noses, mouths, and wearing apparel of passers-by. This is repeated daily in fine weather. On rainy mornings, when there are pools of water thickened into consistency by the dust and dung aforesaid, the mud, or some portion of it, is shovelled into a cart which, while rolling off leisurely, deposits many a splash of liquid filth on carriage-way, or gutter, or pavement, as the case may be, and as the position of the cart permits. Of course, during winter the mud-cart is often in evidence, and the water-cart disappears altogether; but in summer the latter predominates, and one has been seen by the present writer near Montagu Square, *on a Sunday*, which in London is like the Night of Scripture, when no man can work. It is, however, only just to the metropolitan municipal authorities to add that neither the Christian pauper nor his excellent masters—members of a vestry or a local board—are ever known to disturb, in their official capacities, the filth and slime of a London Sabbath.

#### The A.A. Curriculum 1894-95.

A distinct alteration for the better is observable in the scheme of the Architectural Association Curriculum as published in the *Brown Book* just issued. The course of study, instead of being taken in four divisions, extending over as many years, is now arranged in three divisions, and takes three years to complete. The course, moreover, is much simplified. That thoroughness of teaching and training which is claimed to be the guiding principle of the course of study laid down in the Curriculum will not be found to suffer from the rearrangement, and the change is likely to be hailed with satisfaction by the students.

In the classes in Division I. Mr. R. Elsey Smith [A.] is the lecturer on the Orders of Greek and Roman Architecture; Mr. F. R. Farrow [F.] on Materials and Construction; Mr. William G. B. Lewis on Practical Perspective; and Mr. R. Holmes, M.A., on Elementary Physics as applicable to Building and Calculation of Strengths. In Division II. the lecturers and subjects are:—Mr. F. R. Farrow [F.] on English Architecture to the year 1500; Professor Kerr [F.] on Materials, their Nature and Application; Mr. Cole A. Adams [F.] on Elementary Ornament and Colour Decoration; and Mr. R. Holmes, M.A., on Stresses and Strains. In Division III. Mr. F. R. Farrow [F.] on The History of Architecture; Professor Kerr [F.] on Materials, their Nature and Application; Mr. A.

Beresford Pite [A.] on Practical Design; and Mr. Max Clarke [A.] on Sanitary Science. The Studio Instructor in Divisions I. and II. is Mr. William G. B. Lewis, and in Division III. Mr. J. A. Slater. Among the lecturers in the extra subjects are Mr. John D. Crace [H.A.] on Colour Decoration; Professor Henry Adams, M.Inst.C.E., on Land Surveying and Levelling; Mr. John Leaning on Quantity Surveying; Mr. Henry W. Burrows [A.] on Geology; and Mr. Lacy W. Ridge [F.] on Professional Practice.

The high standard at which the Association teaching aims ensures that any young man who works consistently and thoroughly through its Classes and Studio will have no need to fear the ordeal of the Progressive Examinations of the Institute.

#### Professor Banister Fletcher's Classes.

The Session 1894-95 of the classes in Architecture, Building Construction, and Modern Practice at King's College opens with the Michaelmas term on the 10th prox. These classes, which are under the direction of Professor Banister Fletcher [F.], are specially arranged to enable architects' pupils, improvers, and others intending to follow the profession of architecture to prepare for the Progressive Examinations of the Institute. The entire course extends over three years, one year being devoted to each of the stages—elementary, advanced, and final. Occasional students may join any or all of the classes, and take the three courses in one year; but it will be found to interfere less with his office work, and be more permanently beneficial to him, if the student's studies are spread over the three years. The classes are fixed late in the afternoon, and the Studio, of which Mr. Banister F. Fletcher [A.] is Instructor, is open every evening. For assistants and others unable to attend during the day evening classes are held, and lectures delivered by Professor Banister Fletcher every Monday, from 7 to 8 p.m. The Syllabus is to be seen in the Institute Library. The distribution of prizes gained last session will take place at the College on Wednesday, the 3rd prox., when the Professor will deliver a lecture on "An Architect's Ramble amongst London Buildings."

#### Mr. Cranage's Lectures at Newcastle.

The Northern Architectural Association calls the attention of its members, and of students of architecture in the district of which it is the centre, to the course of twelve lectures on Gothic Architecture announced to be delivered at Newcastle-upon-Tyne during the early weeks of the ensuing session by Mr. D. H. S. Cranage, M.A., of King's College, Cambridge, in connection with the University Extension movement. Newcastle, it will be remembered, is the headquarters of the Association. The introductory lecture is to be delivered

to-day, the 20th September, when Mr. Cranage will explain the plan and scope of the lectures, and deal with Definitions, and the Three Principles of Construction, illustrating his subject with views of celebrated Classical buildings. "Architecture before the Norman Conquest" forms the subject of the second lecture, to be delivered on the 27th inst. "The Norman Style" will be dealt with in the third and fourth lectures, on the 4th and 11th October; and "The Early English Style" in the fifth and sixth, on the 18th and 25th October. Lecture VII., 1st November, "The Decorated Style"; VIII., 8th November, "The Perpendicular Style"; IX., 15th November, "Mouldings"; X., 22nd November, "Timber Roofs and Screens"; XI., 29th November, "Architectural Art." The concluding lecture, on the 6th December, will be devoted to illustrations of the Principles discussed in the lectures by reference to a local building or buildings. The inclusive fee for the whole series of this extremely comprehensive course is five shillings.

#### The late Henry Faija, M.Inst.C.E. [H.A.]

Henry Faija, M.Inst.C.E., a member of the Institute since 1881, died at his Sunbury residence on the 21st ult., of epithelioma, after a protracted and distressing illness, which for the last three months of his life compelled him to retire from active business. The following notice of his life and work is kindly furnished by his partner, Mr. D. B. Butler:—

Henry Faija was born in London in 1844, and educated at University College School, whence he was duly articled to a shipbuilding firm on the Thames. After occupying important positions in various shipbuilding yards in the North of England, he turned his attention to engineering as a profession, and in 1870 started practice as an engineer in John Street, Bedford Row, W.C. It was here that he almost accidentally took up the subject of Portland cement, for on obtaining a commission to design and erect a cement works he became impressed with the crude and wasteful methods then employed for producing the material in question. Thereupon he commenced to make a special study of the subject, for which he afterwards attained a world-wide celebrity. About 1875 he removed to Westminster and established a Portland cement testing-room and laboratory, where cements and kindred materials were examined and reported upon, and the increase of this branch of his practice was an indication of the value which was placed upon his opinion.

In 1881 he read a Paper before the Institute on the subject with which he had already closely identified himself; since that time he had read Papers on the same and kindred subjects before nearly all the principal learned Societies both in England and abroad, and last year he was specially invited by the American Society of Civil Engi-

neers to read a Paper before the Engineering Congress at the Chicago Exposition.

As an inventor his efforts were marked by special ability, several ingenious inventions bearing his name. One of the principal results of his researches in the examination of cement for the estimation of its constructive value is his apparatus for determining its freedom from expansion. This, by artificially accelerating the setting and hardening of a sample, enables an opinion to be arrived at in twenty-four hours; while in the ordinary course it would take at least a week. When the magnesia "scare" occurred in 1888, owing to the failures at Aberdeen, he was particularly active in opposing the idea that sea water had a destructive effect on concrete properly constructed of sound cement, and the results of his experiments and the arguments deduced therefrom went far to prove the correctness of his theories.

His chief work as an author is his little handbook, *Portland Cement for Users*, which was published in 1881, and has since attained sufficient popularity to warrant its being included in Weale's Rudimentary Scientific Series; he also contributed articles at various times to the leading professional papers.

Apart from his acknowledged ability, his unvarying straightforwardness and upright dealing were highly appreciated by all who came in contact with him professionally, while in private life his kindly good-nature and readiness to assist will make his loss severely felt among those who had the good fortune to number him among their personal friends.

#### The Labour Congress.

It would be out of place in this JOURNAL to discuss at any length the proceedings of the session of the Labour Parliament recently holden at Norwich. Yet it may be permitted, on behalf of the many members of the Institute who are not unfavourably disposed towards the principle of trade unionism as till lately understood, to express a word of regret at the wild and mischievous proposals embodied in the resolutions passed with such glib celerity at the Norwich Congress. It is difficult to treat seriously of the work of a body of men who, without the slightest approach to rational discussion, declare in favour of the nationalisation, not only of land and mines and railways, but of all the instruments of production, distribution, and exchange—that is to say, of all public and private property. After such a proof of the temper of the representatives of labour, and of their capacity for the duties appertaining to them as such, the rest of their performances seem tame by comparison. That the artisan and labouring class should become the great leisured class of the community by the compulsory limitation of its hours of labour has long been a plank in the platform of self-seeking Labour agi-



tators. But what is to be said for the egregious proposal to make it a penal offence for employers to bring extra labour into a district where the existing supply is sufficient? The true significance of this, of course, lies in the fact that if men go out on strike all business is to remain at a standstill until they are pleased to go back to work, and any attempt to introduce outsiders put down by the strong arm of the law.

It will hardly be disputed that trade organisations conducted by cool-headed men on sensible and moderate lines would be a likely means of settling disputes between labour and capital; and a gathering of picked men, representing the general views of their class, discussing temperately matters of disagreement which arise between employers and employed, would help materially to solve the industrial problems of the day. Employers, doubtless, would look at the results of such discussions through different spectacles from their men; but, at any rate, they would learn where the shoe pinched, what the grievances of their men were, and what they actually wanted; and out of this knowledge a compromise or a working arrangement might easily be arrived at. This, however, does not suit the Labour leaders; it is too insignificant, too unimportant. They prefer to dabble with a task for which they are entirely unfitted, and for the performance of which they certainly have no mandate from their constituents.

When English representatives have taken part in Labour Congresses abroad, they have pointedly stood aloof from the Socialism of the Continental leaders. The English artisan is not a Socialist, and one good result may follow from the proceedings at Norwich: he will be able to see for himself whether the leaders of the new trade-unionism would lead him.

#### The Gohna Dam and the suggested Nile Dam.

An object lesson for those who would construct a dam across the bed of the Nile, and submerge the island of Philæ, is afforded by the recent overflow of the Gohna lake, and the consequent destruction of a vast number of buildings and other property—the population of the district invaded by the waters having been saved solely through the presence and skill of the British administrative officers. A leading article in *The Times* (29th ult.) gives an excellent description of the whole affair. About a year ago a landslip occurred by which a tributary of the river Alaknanda was naturally dammed so as to form a long, deep lake; and last March “the dam formed an exposed surface of 423 acres; but “the river had already become a lake of two and “three quarter miles in length, and this was growing steadily, the dam being, of course, submerged “by the mounting waters.” The dam burst on the 26th ult., and the following account of what happened is taken from “Reuter’s Special Service” as reported in *The Times* :—

A flood 30 feet high, sweeping onward with irresistible force, reached Chamoli, halfway between Gohna and Srinagar, at half-past twelve on the 26th. At one in the morning there was another tremendous rush of water, which descended with an awful roar, but nothing was visible, owing to the constantly-thickening mist. The flood travelled at an average rate of twenty-four miles an hour all down the valley, rising in places to a height of 200 feet. At Chamoli it rose to 160 feet, destroying the bazaars and the hospital. At Srinagar the devastation was even more widespread, and it is not expected that a single house for miles around has been left standing.

The flood reached Hardwar, which is 160 miles distant from Gohna, where the dam was formed, at nine o’clock on Sunday, and by noon the river had risen 12 feet. It presented a magnificent spectacle, and the view from the surrounding heights was at once grand and terrible. Immense trees, logs, carved doorposts from Srinagar, and immense quantities of similar debris, mingled with the carcasses of animals—few of them, however, being domestic animals—were swept along by the seething torrent. The great mass of the debris followed the course of the blue stream, which carries two-thirds of the river. The lesser stream, which passes the Ghâts and temples of Hardwar, was less congested, and this is no doubt the explanation of the fact that the shrines are reported safe. At Hardwar all Government buildings, with the exception of the telegraph-office, were destroyed.

That all destruction of human life was averted is due to the fact that the precise date of the overflow of the dam was accurately calculated by Mr. Thomas H. Holland, whose investigations into the Gohna landslip are published in the Records of the Geological Survey of India.

Now, it may be well to remember that “before “it [the lake in question] could overflow, its length “must reach seven miles”; and to ask, What is to be the length of the lake which it is proposed to form in Upper Egypt? The suggestion is to erect a dam, nearly a mile in length and 70 feet high, across the bed of the Nile, in order to pond up the water for a hundred miles in a huge reservoir. If the destruction caused by the bursting of the Gohna natural dam, which ponded up the water for seven miles, was such as it is stated to be, it may be possible, perhaps, to calculate the extent and amount of damage likely to be caused to Egypt by the bursting of the proposed artificial dam near Philæ, and the letting loose of a lake or reservoir of Nile water one hundred miles in length.

#### The Howard Lectures of Prof. Unwin M.A., F.R.S.

One of the latest additions to the Library is Professor Unwin’s book on *The Development and Transmission of Power from Central Stations* [Longmans, Green & Co.], being the Howard Lectures delivered at the Society of Arts in 1893. A review of the work will appear at an early opportunity, and meanwhile Mr. Arthur S. Flower, M.A., an energetic Hon. Secretary of the Literature Standing Committee, sends a note about it as follows :—

There are two classes of persons who are nowadays expected to know everything—or very nearly

so—if we may judge from the courses of instruction laid down or proposed for aspirants to their respective professions, and these are naval officers and architects. Of the former it has recently been stated with an air of authority that “to-day, in order to raise him out of the ruck, he ought to know (in addition to seamanship, navigation, pilotage, gunnery, &c.) much of chemistry, steam, law, electricity, pneumatics, hydrostatics, dynamics, metallurgy,” together with extra accomplishments too numerous to recount. In most of the sciences just mentioned average architects, of the grown-up generation at any rate, are no more profoundly versed than the majority of sailors brought up in the ways of the older school. The nautical simile is more particularly suggested by the very prominent position assigned by Professor Unwin to hydraulics: “ἀριστον μὲν ὕδωρ” appears to be the text of his discourse. Briefly, every practicable system of accumulating, storing, and transmitting power for mechanical purposes is here described and discussed with admirable method and thoroughness; and the conclusion of the whole matter seems to be that the world-old water-wheel, in its new form, the turbine, stands fair to supplant both steam-engine and steam-driven dynamo alike. Here is promise of a consummation devoutly to be wished—machinery without smoke! If the new engineers succeed in bringing this about, they may after all restore again the beauty of a world which the old ones have done so much to render hideous. May good luck attend all such developments of the use of water!

## REVIEWS OF NEW BOOKS. XIV.

(37.)

### THE SUPERINTENDENT SUPERINTENDED.

*Building Superintendence: A Manual for Young Architects, Students, and others interested in Building Operations as carried on at the present day.* By T. M. Clark, Fellow of the American Institute of Architects. Twelfth Edition. 4o. New York and London, 1894. Price 12s. net. [Macmillan & Co., 29-30 Bedford Street, Covent Garden, London.]

*Quis custodiet custodem?* They do some things better in America, and many things differently; but, for all that, young architects out there are, inwardly, much like young architects here. If they get any work at all they begin, like us, with a “first job,” and have, like the English beginner, to go forth and do battle with an omniscient contractor, conscious that for their own part they are not quite sure of the right appearance of Portland cement, or of the way a plumber makes a wiped joint. It is to give strength to the weak knees of these nervous novices that Mr. T. M. Clark has written a book—one of those books which bring courage to a young architect in the thought that, though on the site he is sole arbiter, he has in his study a High Court of Appeal to which he can

refer in secret. In such books as this the superintendent looks for superintendence, the director for directions. Mr. Clark, to be sure, writes as an American for Americans, and though there is much in his crowded pages of small print from which an Englishman may learn, it is not a book for British babes, inasmuch as it is full of expressions and methods which have no place in our vocabulary or practice. “Crandling” and “Pene hammering” would, I fancy, be called for in vain in an English mason’s yard; and though we have in our churches the equivalent of the “bell deck” and the “robing room,” we do not recognise the “society room under the chancel.” An intelligent reader, especially if not too young, will none the less find in the book a store of interesting and useful miscellany. If the doubts and troubles of the youthful architect are much the same on both sides of the Atlantic, so also are the wiles of the unscrupulous contractor. Americans, we know, are not often taken in, but it seems that for all that it is worth the American builder’s while to “try it on” sometimes.

In America, as here, there exists the wicked man who will cut his stair strings too narrow, and attempt to set things right by throwing the treads out of level; there, as here, a contractor will put his foundations in wrong, and subsequently correct his error by building the superstructure according to plan, but without reference to the position of the foundations. I recall, by the way, a curious and very disastrous example of this particular evil practice in connection with a county church in Dorsetshire. In the severe drought of last year the church was found to be falling on the north side. An expert was called in, and he began his investigations by searching for the footings. These were easily discovered on all sides of the church but the north, and so near the surface that they could be touched with the point of an umbrella bored into the sod. Subsequently a hole was dug against the north wall, and the footings and concrete were found at last set back three inches behind the face of the wall! The original contractor had obviously discovered a mistake in the setting out of his concrete and footings, and to correct the error had built his main wall oversailing the foundations. It is to the prevention of these and many another blunder and fraud that Mr. Clark addresses himself, and there is much in his remarks in all sections of his work which may be regarded as applicable, in detail as well as in principle, to the architecture of all countries. In many ways the most interesting part of his work to an English reader is the chapter on the construction of a timber house. Building Acts and local by-laws have unfortunately expelled the timber house from almost all English districts. There can be no doubt that many advantages are to be set against the principal objection to this style of building, and though we

are practically forbidden to indulge in it in this country, we may realise on reading Mr. Clark's book that in America the subject is not neglected, and that the proper method of construction (there are many wrong methods) is carefully cherished. The homes of farm settlers, and even town buildings, in many parts of the North American continent are, I am aware, constantly put together with the most reckless disregard of construction. It would astonish some of our examiners fresh from the three volumes of *Building Construction* to learn how long a house will last which is simply held together by nails. *Building Superintendence*, while recognising the prevalence of these haphazard methods—locally known as "balloon-framing"—gives its readers an ample description of the truer constructive principles of timber buildings.

It is a rather rude shock to one who believes that the Americans are ahead of us in all things scientific, mechanical, and hygienic to find that the peppermint test is regarded as the ultimate criterion of drains and plumbing. The smoke test is, to be sure, alluded to, but condemned as inconvenient; and our modern stringent water-tests are—by Mr. Clark—practically unrecognised.

PAUL WATERHOUSE.

(38.)

#### PROTESTANT CHURCHES

FROM THE REFORMATION TO THE PRESENT DAY.

*Der Kirchenbau des Protestantismus von der Reformation bis zur Gegenwart. Herausgegeben von der Vereinigung Berliner Architekten. With 1041 Plans, Sections, and Elevations. Large 4to. 1893. Ernst Toeche, Berlin.*

When the Berlin Association of Architects was recently reorganised, its members wished to find a means of diffusing more widely the influence which they already possessed as the leading Architectural Society of Germany. With this end in view they sought for their consideration subjects that might be of interest, not only to themselves, but also to the public in general. "For," to quote their words, "we trusted that the choice of such a subject would more surely lead to that sympathy with public opinion without which architects cannot hope to acquire any effectual influence on outsiders." Among the various subjects proposed none seemed more suitable than that of Protestant church building, and for this choice there are many reasons. Of late years large numbers of churches have been built, and the subject has attracted considerable public attention. There are as usual two parties holding opinions diametrically opposed to each other, each striving for the upper hand. On the one side, special stress is laid on the acknowledged feeling of solemnity produced by the buildings of the Middle Ages for the Roman Catholic ritual; while on the other there is a striving for an original plan and arrangement which should arise from, and

represent the spirit of the Protestant form of worship.

Very little had been previously written on the subject, and it was felt that the best way to work it out was to go into its history, and to trace the development of the various arrangements at present in use, and their appropriateness to the ritual. In order to collect materials for such a work architects were invited to send in to the Society drawings of every kind of Protestant church from the time of the Reformation, and eventually Herr K. E. O. Fritsch, editor of the *Deutsche Bauzeitung*, was asked to classify and arrange them for publication. This he has done with admirable clearness. Over 300 plans, showing the most varied arrangement of parts, are given; they are drawn to a uniform scale of  $\frac{1}{1000}$ , and are in most cases accompanied by elevations or sketches, sometimes even sections. The letterpress is also very interesting, tracing as it does the development in the pre-Reformation churches from the conventual to the parish church, and showing that the demand for a large, clear, open floor space is not so entirely a Protestant requirement as has usually been supposed. On the other hand, much greater stress is laid on the Protestant innovation of fixed seating, which is shown to have exercised considerable influence on the relative positions of altar and pulpit, as well as on the general plan of the church. To have both in full view of the whole congregation is an essential of the Protestant plan, and thus deep choirs or transepts are shown to be undesirable. Peculiar, and found chiefly in the churches of Saxony down to the end of the last century, are the "Betstübchen," box-like enclosures for the use of the higher classes, reserved for private prayer. A royal box overlooking the altar is always provided in every church where royalty may be expected. The extent as well as the number of galleries is especially striking; even four tiers are found, accommodation being thus provided in the Gnadenkirche at Hirschberg for as many as ten thousand persons; in this case seventy-two parishes assembled under one roof.

The subject is treated exclusively with regard to the plan, its suitability to the requirements of the Protestant service, and the degree to which the difference between the two forms of religion is expressed. The style or system of building is not discussed, but many references are made to the unpropitious circumstances under which the large majority of churches were built. The available funds were usually of the scantiest, while accommodation was required for vast congregations, and many churches had to be built in the shortest time possible.

The greater part of the book naturally deals with churches in Germany, of which quite one half belong to the last fifty years. There are also chapters on the other countries of Europe and

America, and an English reader may perhaps regret that specimens of churches erected in this country have not been chosen for illustration more representative than some of those selected.

B. A. CHARLES.

(39.)

## THE CASTLE OF MILAN

UNDER THE VISCONTI AND THE SFORZA.

*Il Castello di Milano sotto il Dominio dei Visconti e degli Sforza, MCCCXLVIII-MDXXXV. With 183 illustrations. 8o. 1894. [Ulrico Hoepli, Milan.]*

Signor Beltrami in the introduction to his most interesting book says that the object he had in view in collecting and arranging the notes of composing it was to excite interest in a work which has monopolised his attention during the last nine years. In 1884 the Consiglio Comunale, wishing to benefit the city of Milan by erecting new quarters for the Tribunal Buonaparte and a manœuvring ground, pitched on a spot which to the public eye was "dismally dark, surprisingly 'vast, and obstinately uniform.'" Signor Beltrami then came forward and pointed out that under this very spot lay the ruins, quite intact, of the formerly renowned Castle of Milan, and that the least that should be done before destroying its traces would be to take exact plans of it and report on the state of preservation of its different parts. Then the Lombardic Historical Society and other bodies went into the question, and finally the Government, seeing the strong feeling against trespassing on this ground, forbade any steps to be taken which might seem to harm the integrity of the monument. As a result of this timely interference Signor Beltrami was commissioned by the Minister of Public Instruction to excavate the ruins, study the subject, and make a restoration of the old work as far as possible.

This book contains the result of his researches, offered in the most acceptable form. To insure clearness he has divided the subject into two parts. In the first he deals with the changes in the construction of the castle and the history of its lords, entering into description only where the lucidity of the narrative requires it. And in the second he gives a methodical and complete description of the different parts as they were in the time of the Sforzas. The first part is mainly composed of extracts from the MSS., of which he consulted several hundreds, in the State archives of Milan, and the National Library of Paris, connected and explained by his own comments. He says he adopted this method because it suited the character of the work in hand. In the one case he was excavating the original building and restoring just so much as was necessary to render the original conception intelligible, and in the other he was digging out old documents, adding his explanations where they were required. Besides this it was his business to controvert many

old ideas and reverse long-standing conclusions, the most effectual way of doing which was to quote the ancient documents word for word.

These are chiefly communications exchanged between the reigning duke and his architects and engineers, whom he addresses as "Our beloved," either on the one hand giving orders for certain changes and additions, or on the other containing descriptions of how the work was progressing and how it was being carried out. Other details are furnished by eyewitnesses from their diaries or correspondence. The historical account begins with the Visconti, for it was Galeazzo II. who in 1358 founded the Castello di Portia Giovia, as Milan at that time possessed no other protection than a battlemented wall around the city.

The castle was added to and embellished by the successors of Galeazzo II. till 1447, when Duke Filippo Maria died; while, the succession being disputed, quarrels arose, and the castle was razed to the ground.

When Francesco Sforza was offered the dukedom he began rebuilding the castle, and the documents record such astonishing rapidity in the progress of the work that without any doubt the Visconti foundations were used, and the work carried on somewhat on the same lines, but in brick instead of stone, and on a much grander scale. The custom seems to have been to employ more than one architect on the same building, each with his particular wing assigned to him, for there is a letter from one Filarete, proposing to decorate the principal front with a terra-cotta frieze representing bulls' heads and swags; while another, Jacopo da Cortona, writes to the Duke strongly urging him not to use this form of decoration, owing to the perishable nature of the material.

Although several architects' names occur in connection with the work, one Gadio da Cremona seems to have had most influence. He was placed in authority over the others, and held his post for nearly thirty years.

Up to 1535, when the account of the varying fortunes of the castle ceases, it seems never to have been free from builders. One duke would add in the direction of fortifications, whilst his successor would spend large sums in decorations. One painter, Saletta, estimates at 1,700 ducats the painting of a room in blue with gold lilies and stars, and another asks 2,300 ducats for adorning the great hall with frescoes representing a hunting scene, in which portraits of living and dead men are to appear, and Duke Galeazzo Maria even writes to define what positions the more important personages are to assume.

Bramante, we know, worked on the spot, for his pupil Cesare Cesariano mentions the fact in his *Comento di Vitruvio*, and amongst other things a little bridge has been discovered which could only have been designed by that master.



Lionardo da Vinci also worked here, but neither in the capacity of architect, painter, nor sculptor, by which he is generally known. He offered himself as military engineer, and quoted the different works of fortification on which he had previously been employed.

Among the 178 engravings scattered through the letterpress there are facsimiles of several of Lionardo's sketches representing the alterations and additions to the fortifications. All the important rooms appear to have had their walls and ceilings adorned with colour decoration, which can still be made out when the whitewash is scraped off, and scraps of which have been copied and illustrated in the book. At one time there must have been a great deal of carved stone work about, but most of the decorative sculpture has disappeared, and the only chisel work of the sixteenth century which has escaped spoliation is that intimately connected with the construction, such as capitals, keystones, &c. These, which have been carefully reproduced, form fine examples of the skill and delicacy of chiselled stonework brought to perfection under the hand of Bambaja.

ETHEL CHARLES.

(40.)

#### PARENZO CATHEDRAL.

*Il Duomo di Parenzo ed i suoi Mosaici. By G. Boni. Estratto dall' Archivio Storico dell' Arte. Anno VII. fas. II. Pamph. large 4o. 1894. [Tipografia dell' Unione Cooperativa Editrice, Roma, Via di Porta Salaria, 23a.]*

At the head of the Adriatic Gulf, nearly opposite Venice, between the 45th and 46th parallel of latitude, is the town of Parenzo in Istria, with a population of about 2,500, once a city of considerable importance and the seat of a bishopric, but now sadly shorn of its splendour, although retaining traces of its former magnificence. The cathedral was built between the years 542-5, under the empire of Justinian, during the pontificate of Pope Vigilius, by Bishop Euphrasius, whose monogram is carved on several of the capitals of the nave. The building, which is of the basilica type, is nearly contemporaneous with the basilicas of Sant' Apollinare-Nuovo (A.D. 493-525) and Sant' Apollinare-ad-Classem (A.D. 538-549) at Ravenna, but retains the atrium, baptistery, and other adjuncts of which the Ravenna churches have been deprived, together with a curious chapel or crypt of uncertain date at the north-east angle.

The plan in Ségur d'Agincourt's work (plate lxxiii. 9) is to a very small scale, and is apparently copied from an Italian source. There is a good plan to scale in Mr. T. G. Jackson's *Dalmatia, the Quarnero and Istria* (iii. p. 311), from Professor Eitelberger's work, in which all the essential features of the building are shown. The cathedral is about 200 feet long, exclusive of the baptistery and campanile at the western end, and about 60 feet wide measured outside the walls. The aisles are divided from the nave by arcades supported by

antique columns of marble and granite, the soffits of which are ornamented in stucco. This stucco-work was considered by Eitelberger to be of the Renaissance period, but Cav. Boni considers it to be contemporaneous with the church. The greater part of the pavement is ancient mosaic, portions being of great interest. The windows are described by Ségur d'Agincourt as being closed with perforated marble slabs similar to those at the amphitheatre at Pola; but it would appear from a passage in Cav. Boni's monograph that these have been removed and the windows modernised. The lower portions of the walls of the apse are richly inlaid with mother-of-pearl, porphyry, serpentine, and other precious materials; and the upper portions, including the semi-dome, are decorated with figure-subjects in mosaic on a gold ground. This decoration was attributed by Eitelberger (*Mittelalter Denkmal.*) to the 13th century, but it is evident from the photographs in Cav. Boni's work that the mosaics are only a little later in date than the church itself, namely, the middle of the sixth century. Mr. Jackson observes (*Dalmatia, &c.*, iii. 324), "The mosaics are a good deal patched "with painted and gilt plaster in different places; "but on the whole they are extremely well pre- "served, and have, at all events hitherto, escaped "the misfortune of restoration." This was written in 1887; but since that time it appears that the mosaics have been handed over to the restorer, and will probably suffer the same fate that has overtaken the mosaics of San Vitale, St. Mark, and elsewhere on the opposite coast of the Adriatic. This is what Cav. Boni, after describing the mosaics, says is being done:—

Such are the mosaics of the cathedral of Parenzo, true architectonic decorations—solidified music, as it were. The restoration of these decorations had been already begun when I visited the building; the restoration consisted in detaching the mosaics on canvas, scraping off the mortar from the joints between tessere in order to bring them together, filling in the interstices with plaster or stone, and refixing the mosaics to a level surface, with the addition of a new gold background composed of tessere of a uniform greenish orange colour arranged in parallel lines.

This method of restoration, if it has the merit of preserving a portion of the materials employed in mosaics of the sixth century, at the same time destroys their most noble characteristics, those, in fact, which reveal the deep and delicate intuition of the effect resulting from the mingling of coloured light, from the distance maintained between the tessere, from the necessity of allowing for the abstraction of sunlight by the atmosphere, and all the other peculiarities which combine to make these mosaics a work of art capable of exciting the delight and admiration of generation after generation yet to come. This kind of restoration ends in becoming an industrial work worth so many florins the square yard.

I do not intend by this to make any suggestion whatever, either to the Central Commission of Vienna, who set aside a considerable sum for the maintenance of the famous cathedral, or to the restorers who continue to carry out at Parenzo that which they were not permitted to do at the Basilica Labicana at Rome; but having had the good fortune—which I esteem greatly—to see these important mosaics, I feel it my duty to satisfy a debt of



gratitude for the instruction and delight I have derived from them, as well as from the beautiful Istrian strand, which deserves that so much of this monument of its prosperity as remains to us should be preserved as far as possible in all its integrity and authenticity.

The building at the north-east angle of the basilica near the eastern end of the north aisle is described by Agincourt as an ancient triclinium consisting of a vestibule and assembly hall, with seats for the bishop and the clergy, and a small oratory. It is probable that this building is the only remaining portion of a more ancient building on the site. It contains some fragments of early pavement, which are figured in Mr. Jackson's *Dalmatia*, &c. At the western end of the nave is an octagonal baptistery, in front of which is the campanile.

The mosaics in the upper portion of the central apse were discovered about four years ago by the architect Natale Tommasi, they having been hidden under a thick coating of lime-white, and are described by him in the *Transactions of the Istrian Archeological Society* (vol. vi. 1891, p. 511). These mosaics were consequently unknown to Mr. Jackson, whose book is dated 1887, and are of great beauty and interest. It is noted by Cav. Boni that the tessere of the gold background of the figures of our Lord and the Apostles are inclined at an angle of about thirty degrees, so as to present a perfectly normal surface to the plane of vision of a spectator entering the church. This gold background has suffered from the caustic action of the lime-white with which it was so long covered, and some of the tessere have lost the vitreous surface which protected the gold-leaf; but those which are intact have, in Cav. Boni's words, "the beautiful warm tone of old sequins, inclining to orange tawny in full light, but tending towards a citron yellow in a grey light."

It seems evident from Cav. Boni's guarded remarks that these beautiful and almost unique examples of early Christian art are being destroyed by restoration. There is no question here, as is sometimes the case, of building a vestry or an organ chamber, of heating a church by underground pipes, of re-arranging the seating, pulling down a western gallery, or doing the thousand-and-one things which are now considered necessary to fit an old building for public worship. Here we have a work of art of extraordinary beauty and rarity, practically intact with the exception of some slight damage which in no wise affects the value of the design, every inch of which is as precious as the brushwork of Claude or Teniers or the chiselwork of Michelangelo or Donatello, being restored in a vulgar, mechanical manner, and reduced to the condition of decoration done at so much a square yard. No one would dare now to advocate the restoration of the Elgin marbles, the Rosetta stone, or the Codex Sinaiticus; but because these mosaics

form a part of a building, they are subjected to the same brutal treatment as the rest of the building, and are hacked, patched, and reworked with no more compunction than if they were the signboards over a gin-palace. It is incredible that the Austrians, who are credited with some culture and some zeal for art, should be so short-sighted and so indifferent to the value of the antiquities of their mother country.

It seems probable from the inscription at the base of the semi-dome at the east end of the nave that Euphrasius availed himself largely of the materials of the ancient basilica in the construction of his church. He found the ancient temple, he says, in a ruinous condition, tottering to its fall; and foreseeing its eventual collapse, he put in new foundations, and rebuilt the superstructure, which he decorated at great expense. This was a common practice in the sixth century, and the early Christians appear to have had no scruples in making use of pagan temples, or of adapting them to Christian ritual. In Boeckh's great work on Greek inscriptions (*Corpus Inscript. Græc.*) is the following inscription copied by Dr. Porter at Edhra, the ancient Edrei of Scripture, in the Hauran, east of the Jordan:—

The abode of demons has become a House of God. A saving light has shone forth where darkness did conceal. Where there were idol sacrifices, there are now choirs of angels. Where God was provoked, now God is propitiated. A certain man, the lover of Christ—Joannes, the son of Diomedes—from his own funds offered a gift to God; an edifice worthy to be seen; placing in this the esteemed relic of the gloriously-victorious holy martyr George, who appeared to Joannes himself, not in a vision, but manifestly, in the year 9 of the year 410, i.e. A.D. 346.

In another inscription we find a Bishop Theodorus proclaiming that he had built a Christian church at Philæ, the sacred isle of Egyptian paganism, and had even changed one of the ancient temples themselves into a Christian church, having first removed the images sculptured on the walls (*Contemporary Review*, June 1880).

Kandler (*Dizionario Corografico dell' Italia*) asserts that the cathedral of Parenzo was built on the remains of a temple to the Capitoline Deity. The mausoleum, he further states, known as the Martyrdom, the Canonry (erected about 1260), and the Bishop's palace have underneath the remains of buildings formerly intended for the use of the military. These buildings appear to correspond with those alluded to by Neale (*Dalmatia and Istria*) in the following passage: "Lastly among the canonical buildings on the south side of the church is one said to have been a tithe-barn, with a grand range of Romanesque coupled windows bearing date 1250." These buildings are not shown on the plan.

The cathedral was restored in 1847 by Bishop Antonio Peteani. The baptistery was restored and almost rebuilt in 1861.

Cav. Boni's monograph, which is of the most

erudite character, is largely occupied with a description of the mosaics and inscriptions, and is illustrated by a plan of the cathedral—which differs from the plan in Mr. Jackson's book, the so-called triclinium at the north-east angle not being shown—and a number of beautiful photographs by the Marquis Giorgio Polesini di Parenzo.

JOHN HEBB.

(41.)

#### MR. RUSKIN ON MODERN GOTHIC.

*The Oxford Museum. By Henry W. Acland, M.D., and John Ruskin, M.A., Honorary Students of Christ Church. From original Edition, 1859. With Additions. 80. 1893. [George Allen, London and Orpington.]*

This little book derives its chief interest from two long and highly characteristic letters of Mr. Ruskin on the subject of the buildings of the University Museum at Oxford, which are not to be found printed elsewhere. Neither the book nor the letters are actually new; but as the first and second editions of the former, in which alone the letters appeared (several editions having been since published without them), date from so long ago as 1859 and 1860, and are hardly more than pamphlets, they have not only been long out of print, but are comparatively little known. The present volume has as its nucleus a lecture by Sir Henry Acland, entitled "Remarks addressed to a Meeting of Architectural Societies at Oxford," originally delivered in 1858, and now revised and expanded; to which are added, besides the two letters already mentioned, a letter from Professor Phillips, the geologist, describing the series of British and Irish marbles which, in the form of pillars and shafts, with elaborately botanical capitals and corbels, adorn the central court of the museum; also several prefaces and appendices by the author, and a few illustrations. The latter include a very fine example of line engraving, by Le Keux, representing a capital with foliage of natural ferns; there is also a ground plan of the buildings in their present state, which shows, by comparison with the plan in the first edition, that the museum now extends over twice the area which it occupied in 1859. It ought to be mentioned that the execution, both of this plan and of the book generally, shows an immense improvement over that of the first edition; in fact, the new edition is a remarkably clear and pretty specimen of typography. The subject matter in general is, however, decidedly fragmentary, and the book cannot in any sense be called a satisfactory monograph of the museum; it is only fair to say that any one hoping to obtain from it a systematic and complete account of the buildings, either as regards their history, structure, or contents, would be sorely disappointed. But taking it just for what it is, a chance collection of thoughts and reminiscences connected with the museum, pleasantly and sympathetically put together, it

will be found often suggestive and sometimes even entertaining.

The letters from Mr. Ruskin will be sure to afford much delight and satisfaction both to believers in his teaching and admirers of his style, for they contain most distinct and authoritative expressions of "the master's" opinions on many a *verata quæstio*, couched in language wellnigh unsurpassable for beauty and vigour. Indeed, they are quite representative documents, and would give to any one quite unacquainted with Mr. Ruskin's other works a very good general notion of his views and principles in matters architectural, as well as of his manner of writing. The principal subjects here dealt with are the advantages of the Gothic style for modern buildings generally, and its special suitability for the purposes of the new museum; the value and grandeur of scientific studies; and the leading ideas which should guide and control the employment of all forms of decorative art. On the choice of a Gothic design for the proposed museum Mr. Ruskin writes to Sir Henry Acland:—

I am quite sure that when you first used your influence to advocate the claims of a Gothic design, you did so under the conviction, shared by all the seriously purposed defenders of the Gothic style, that the essence and power of Gothic, properly so called, lay in its adaptability to all need; in that perfect and unlimited flexibility which would enable the architect to provide all that was required, in the simplest and most convenient way; and to give you the best offices, the best lecture-rooms, laboratories, and museums, which could be provided with the sum of money at his disposal.

So far as the architect has failed in doing this; so far as you find yourself . . . in anywise inconvenienced by forms of architecture; so far as pillars or piers come in your way when you have to point, or vaults in the way of your voice when you have to speak, or mullions in the way of your light when you want to see; just so far the architect has failed in expressing his own principles, or those of pure Gothic art. I do not suppose that such failure has taken place to any considerable extent; but so far as it has taken place, it cannot in justice be laid to the score of the style, since precedent has shown sufficiently, that very uncomfortable and useless rooms may be provided in all other styles as well as in Gothic.

Having visited the museum when just completed, he writes in his second letter:—

You will not think that it was matter of indifference to me when I saw, as I went over Professor Brodie's chemical laboratories the other day, how closely this success of adaptation was connected with the choice of the style. It was very touching and wonderful to me. Here was the architecture which I had learned to know and love in pensive ruins deserted by the hopes and efforts of men, or in dismantled fortress-fragments recording only their cruelty;—here was this very architecture lending itself, as if created only for these, to the foremost activities of human discovery and the tenderest functions of human mercy. No other architecture, as I felt in an instant, could have thus adapted itself to a new and strange office. No fixed arrangements of frieze and pillar, nor accepted proportions of wall and roof, nor practised refinements of classical decoration, could have otherwise than absurdly and fantastically yielded its bed to the crucible and its blast to the furnace; but these old vaultings and strong

buttresses—ready always to do service to man, whatever his bidding—to shake the waves of war back from his seats of rock, or prolong, through faint twilights of sanctuary, the sighs of his superstition—he had but to ask it of them, and they entered at once into the lowliest ministries of the arts of healing, and the sternest and clearest offices in the service of science.

These quotations are somewhat lengthy, but as we happen also to have Fergusson's opinion of this particular building, given in the chapter on the Gothic Revival in his *History of Modern Architecture*, it is, to say the least, amusing to compare the opposite ways in which the Oxford Museum affected these two distinguished critics. Fergusson said:—

The third building chosen to illustrate the downward progress of the art is the New Museum at Oxford. This was designed to be Gothic in conception, Gothic in detail, and Gothic in finish. Nothing was to betray the hated and hateful nineteenth century. . . . The roof of the Great Central Hall of the Oxford Museum and the iron-work that supports it are made purposely clumsy and awkward. The Lecture-rooms are cold, draughty, and difficult to speak in. The Library is a long, ill-proportioned gallery, with a rudely constructed roof, painted in the crudest and most inharmonious colours; the windows glazed in the least convenient manner with the worst possible glass; and the bookcases arranged, not to accommodate books, but to look monkish. . . . On wandering further you enter what seems a kitchen of the age of that at Glastonbury, and find a professor, not practising alchemy, but repeating certain experiments you believe to be of modern invention; and the only relief you experience is to find that his thermometer and barometer and other instruments must, from the style of their ornaments, belong to an age long anterior to that when those impostors Torcelli, Galileo, and Newton are said to have invented these things.

There could hardly be a better illustration of those diversities of temperament which influence so enormously what people call their artistic judgment, producing differences of appreciation quite irreconcilable, because there does not exist any sort of mutual base for their discussion.

Mr. Ruskin is not always credited with being a friend to scientific research, but never, even in an inaugural address at a British Association Meeting or Congress of Hygiene, have its claims to respect been more forcibly indicated than in this book. Many are the pieces of criticism which it is tempting—but scarcely fair—to quote; there is only room now to recommend the perusal at least, if not the exact following, of the letters themselves, by the preservation and careful publication of which Sir Henry Acland will certainly win the sincere gratitude of many readers.

ARTHUR SMYTH FLOWER.

## NOTES, QUERIES, AND REPLIES.

### Architects and Artisans or Artificers.

From OWEN FLEMING [J.]—

On 8th December 1893, at an ordinary meeting of the Architectural Association, a most interesting

discussion took place upon the Education of London Workmen. It was my privilege to initiate the debate, and I ventured to suggest for the consideration of the meeting the desirability of appointing a Standing Joint Committee of architects, builders, and workmen to consider the numerous and troublesome questions which are continually arising in connection with the development of the education of our artificers, and to encourage a close and sympathetic understanding between those who design and those who execute the designs of others. I ventured to urge that the responsibility of architects did not end with the education of themselves, and I submitted that if architects failed to assert their rightful position as leaders of workmanship, it was reasonable to assume that others would fill their places, and it was a serious question whether any persons were as qualified to direct workmanship as those whose lives were devoted to a study of the question. The discussion was of a particularly animated and thoughtful character, and the idea of a Joint Committee was warmly supported by representatives of the three classes concerned. Mr. Blashill, a Fellow of the Institute, in the course of a sympathetic speech, said: "If they could get the committee together, he was certain that good would come of it, not 'only to the trades but to London also.'" Mr. Henry Holloway, who represented the Association of Master Builders, fully endorsed the proposal, and said how much the master builders appreciated the opportunity that had been given them of being present at the discussion. On behalf of the workmen, Alderman Taylor, in an able contribution to the debate, expressed himself "very pleased with the suggestion with regard to the Joint Committee"; while Mr. Verdon, the secretary of the Building Trades' Federation, thought "that the project under consideration would be the means of drawing the three classes—viz. the architect, the contractor, and the working-man—more closely together, and so bridge over the gulf that had divided them."

The press devoted considerable attention to the discussion, and welcomed the idea of the suggested conference. The *Daily Chronicle* said that "the hands of those already engaged in the work of diffusing the opportunities of technical education would be immensely strengthened if the leading spirits of every branch of industrial art and work would actively follow some such course" as was proposed at the Architectural Association; while Mr. Broadhurst wrote that if the movement in question is energetically followed up, and the suggested reforms are carried out by architects and supported by the public, the country will be deeply indebted to the promoter; and in no section of society will they find more loyal helpers than in the trade unions affected.

On the first available opportunity a resolution was approved at a General Meeting of the Asso-

ciation instructing their committee to proceed with the matter, and after considerable deliberation and inquiry they have decided to recommend the Association to call a conference of representatives of the various bodies interested in the question. Since this decision was arrived at, a Trade Conference has been held at the County Hall, Spring Gardens, S.W., at the invitation and under the auspices of the Technical Education Board, and at that conference a resolution was proposed to form a committee immediately to consider the decline of apprenticeship. The chairman of the conference, however, interposed, and suggested to the meeting that in view of the conference then being promoted by the Architectural Association it would be better to let the proposed committee come out of that conference rather than from the one over which he was then presiding. The mover of the resolution and the other representatives present cordially concurred in this suggestion, and the matter was thereupon left in the hands of the Architectural Association.

The proposal, therefore, is now assuming a definite shape, as the Committee of the Association have forwarded full particulars of the proposed conference to the following bodies, whom they have determined should be invited to take part in the deliberations:—

**Architects:**

The Royal Institute of British Architects.  
The Architectural Association.  
The Art Workers' Guild.  
Independent London Architects.

**Master Builders:**

The Institute of Builders.  
The Master Builders' Association.

**Workmen:**

The Building Trades' Federation.  
The Operative Bricklayers' Society.  
The Amalgamated Society of Carpenters and Joiners.  
The National Association of Operative Plasterers.  
The United Operative Plumbers' Association.  
The Operative Stonemasons' Society.

**City Companies:**

The Carpenters' Company.  
The Plumbers' Company.  
The Bricklayers' Company.

**Educational Bodies:**

The Technical Education Board.  
The London School Board.

**Polytechnics:**

The City and Guilds' Technical Institute.  
The Battersea Polytechnic.  
The Borough Polytechnic.  
The Goldsmiths' Institute.  
The People's Palace.  
The Regent Street Polytechnic.

The agenda that has been drawn up is of a very comprehensive character, and includes the position of apprenticeship and the direction and character of technical education, the influence on the education of the skilled workmen of the Technical

Education Board, the School Board, the City Companies, the Trades Unions, and the Department of Science and Art, the question of registration in the trades, the overlapping of trades and consequent disputes and strikes, and the possibility of organising competitions and meetings for discussion between architects and workmen.

It is obvious from the above that the active sympathy and co-operation of the Institute is of the highest degree of importance if the conference (and probable permanent committee arising therefrom) is to be a success. Speaking as a member of the Institute, I would, with all deference, submit that a movement which may fairly be described as of national moment should be aided and encouraged in every way by us. As I ventured to suggest in my Paper to the Association, it is a movement which should be led and directed by architects, and this view has been emphasised by the decision of the conference of workmen and the Technical Education Board of the London County Council to leave the matter in our hands. It has been suggested to me that it would have been more courteous if I had laid the original proposal before the Institute instead of the Association. This view of the case has certainly much to commend it, and if I had originally fully realised the extent to which the proposal has since developed I should undoubtedly have done so. But if blame is due on this point it is due to me only, and I feel convinced that the Institute and its Council will not allow this consideration to weigh with them, but will give generous and earnest attention to the proposal now being made to them by the Association, and take advantage of the opportunity to lead—as nobody but they can lead—this important movement.

**Painting of Arabic Buildings in Egypt [p. 600].**

From Mr. SOMERS CLARKE, F.S.A.—

A recent visit to some of the buildings in Cairo, the coloured decorations of which are being "restored" under the auspices of Mr. Herz, leads one to hope that further work in this direction may be stopped. The Eastern mind is averse to repairs of any description. Many of the most beautiful monuments of Arab art were falling to pieces until recently. Now, however, these structures are, for the most part, placed under the charge of the "Comité de Conservation des Monuments de l'Art Arabe." This body has been in existence for a good many years, and some of the works "restored" in its early days are terrible to look upon. No words can describe the horrors of the Sebil of El Ghuri perpetrated by a former architect to the conservators, Franz Bey. There is not a trace of antiquity left. The present architect in charge of the repairs is Mr. Herz, and he may be congratulated upon having dealt with many of the ancient buildings in the most careful, tender, and conservative manner. His proposal, therefore, to restore



painted decorations perished long ago is a great disappointment. He has already been experimenting in the Mosque El Muaiyad. In the spring of this year there might be seen on the pulpit and on some of the doors experimental restorations. The very words "experimental restoration" carry absurdity on their face. In this mosque the marble has been either renewed or scoured, new capitals and new bases are added to the columns. The grand colours of age have been rejected, and if the painting be completed, glaring vermilion, violent blue, and staring gold will take the place of the sober greys, browns, and orange imparted by the lapse of centuries. The colours used in the so-called restoration are very different from the colours used in the original work; and, different or not, the thing is utterly false, and most horribly discordant. Reference has been made to the Sebil El Ghuri. Across the road is the Mosque El Ghuri. Here nothing has yet been done. Some repairs are undoubtedly needed, but a more harmonious, venerable, and beautiful effect than this mosque presents, bearing on its walls the touch of time, cannot be found. A "thorough restoration" would make the place abominable. The building as it stands is an excellent example of how much beauty there is imparted to the structure by age, and by what a little touch the whole could be upset. A very unfortunate feature in the repairs is the extraordinarily bad glass used to mend the windows. The old glass is of rich amber, green, and ruby; the modern is the thinnest and most glaring stuff. The old seems to be altogether removed and the rubbish set in its place.

#### Forgotten Staircases: an Old Story.

From JOHN HEBB [F].—

It is an amusing example of the persistence of popular errors to find how frequently it has been attributed to architects that they had forgotten the staircase of a building they had designed, and only perceived their mistake at the last moment. In a biographical sketch of his great-uncle, Thomas Leverton, by Professor Donaldson, in the *Dictionary of Architecture* it is gravely recorded that "Leverton built a house in the country for "Nathaniel Middleton, Esq., wherein he is said "to have forgotten the staircase." No further particulars are given, and it is therefore impossible to investigate the origin of the legend—as legend it certainly is—as can be demonstrated from the repetition of the tale in various places.

In 1834 the Lyceum Theatre, London, was rebuilt by Samuel Beazley, architect and dramatic author, when it was then asserted that the architect had forgotten the gallery staircase, and that a temporary staircase had to be constructed in order to admit of the theatre being opened. *The Athenæum*, in noticing the opening of the theatre, alludes to this rumour in the following paragraph:—"We are happy to perceive by Mr.

Beazley's letter to the papers that he has explained away his supposed omission of a gallery staircase. The temporary wooden stairs at present seen outside the theatre might very naturally lead people up to such a belief, but the judicious steps he has taken will set all right again, and bring people's understandings down to the real ground on which the matter rests." \*

*The Builder*, on the occasion of the re-opening of the theatre under the management of Madame Vestris, in allusion to the report, explained that the contract for rebuilding the theatre, which had been destroyed by fire, did not include the green-room and dressing-rooms, which were postponed until 1838, and cost about £3,000. "The side building included the gallery stairs; consequently, until erected, a temporary staircase to that part of the house was required. This gave rise to a curious report that the architect had forgotten to provide means of access to the gallery within the house; which appears to have been generally received, since we find a letter from the architect in *The Times* explaining the circumstance and contradicting the inference." †

The architect of the theatre addressed the following letter to *The Times* newspaper:—

Sir,—Not supposing that any one would seriously believe that I had forgotten the gallery staircase in the new theatre, I suffered it to pass unnoticed; but understanding that the paragraph had been copied into most of the London journals, I am urged by my friends to contradict a report for which there is no foundation.

The fact is that for the security of the audience in case of fire all the entrances, together with the wardrobes, green-room, dressing-rooms, and offices, are planned on the outside of the main wall of the theatre, and the staircase to the gallery is in that compartment on the north side which is devoted to the dressing-rooms, green-room, &c., and it not being within Mr. Arnold's plan to erect that compartment of the building until the theatre (the main point) was completed and opened, it of course became necessary to construct a temporary staircase to the gallery until that part of the building could be finished. An inspection of the original plan, copies of which may be seen at the Woods and Forests, at my office, and at my builders, Messrs. Grissel & Peto, York Road, Lambeth, will convince anybody of the truth of this statement. I can only add, that the temporary staircase has been constructed with every regard to security, and has been inspected by the architects to the Woods and Forests, the district surveyor, and the surveyor of pavements, as well as built under my own superintendence.

Your giving publicity to this fact and contradicting the rumour will add to the obligation already conferred by your favourable report of my building.—I remain, Sir, your most obedient servant,

SAMUEL BEAZLEY.

29, Soho Square, 16 July 1834.

Mr. Beazley's letter is not very convincing, and it is difficult to understand, if he was so anxious with regard to the safety of the audience from fire, why a permanent staircase was not constructed to the gallery, nor why the authorities permitted the temporary staircase, which appears to have been

\* *Athenæum*, July 19, 1834. † *Builder*, vol. v. p. 489.



of wood, to remain for four years after the opening of the theatre.

It seems probable that there was another reason why the permanent staircase to the gallery was delayed beyond that assigned in Mr. Beazley's letter to *The Times*, and that was that Mr. Arnold was in negotiation with the owner of a house adjoining the theatre in Exeter Street in order to obtain a more advantageous site for the staircase than the original site of the theatre afforded.

The permanent staircase to the Gallery when erected was an extremely inconvenient one: the second flight, the steps of which were of cast iron with open risers, being only 3 feet 6 inches wide in one flight of twenty-four steps, and the top flight 5 feet wide in one flight of twenty-six steps. This staircase remained until 1888, when it was removed on the requisition of the Metropolitan Board of Works, and a new staircase provided in its place.

A curious variation of the popular legend is related by Léon Gozlan in a description of Balzac at Jardies, where the celebrated novelist built himself a villa. Gozlan declares: "On a prétendu qu'en dirigeant lui-même avec un despotisme sans concessions la construction du pavillon [de Jardies] il avait oublié l'escalier. Qu'il admit aucun conseil, aucune observation, aucune critique venue de son architecte ou de ses maçons c'était là un fait que nous attestons; mais qu'il ait négligé de commander l'escalier dans l'ordonnance intérieure de la maison et qu'un beau jour maçons et architectes soient accourus lui dire 'Monsieur de Balzac, la maison est finie, quand voulez-vous que nous fassions l'escalier?' c'est là un second fait qui exige dans la mesure de son importance une explication."\* The explanation was that Balzac had found that the space assigned by his architect for the staircase cramped the size of the rooms; he therefore deferred the construction of the staircase until the house was nearly finished, and eventually absorbed the space intended for the staircase into the house, and built the staircase outside. In this instance no blame is attributed to the architect, as it is evident from Gozlan's description that Balzac took the conduct of affairs into his own hands, and was practically his own architect.

#### A Builder's Estimate of the Architect's Functions.

From WILLIAM H. WHITE [F].—

Not long ago, on an evening when it was my good fortune to take part in the Annual Dinner of the Institute of Builders, I sat next a member of that body whom I had met on a previous occasion, and who had his own specific views "with regard to architecture as a close profession, and the necessary relative position and qualification of

"the surveyor." Having served his articles with a well-known architect in London, this gentleman has for some time carried on an excellent business in the country as a builder and general contractor; and he would solve the sad and once-vexed question of "Architecture, an Art or a Profession?" in the following fashion:—

An architect should pass a preliminary classical examination on a par with the Legal and Medical.

A second examination should be in the history of architecture from its earliest stages to the present, showing a full knowledge of the social and political causes.

A third examination should be in planning, together with certain complete drawings and with a special reference to cubical contents of air, superficial area of light, relative space of halls and corridors, ventilation and acoustic properties. I think, also, a knowledge of the rudiments of sanitary science would be useful.

At least one year should be spent on the Continent, and a given number of sketches and measured details required before a diploma is granted.

Of course, if the conditions were enforced many would be plucked; so are many would-be "limbs of the law" and of medicine and so much the better for the respective professions.

An architect, by these means, would at least be a gentleman by education, and in possession of the knowledge that should protect the public from the gross atrocities that are from time to time inflicted upon them; and the profession would be protected from the "designing" builder and the aspiring artisan.

I do not think an architect should be called upon for more than a very general knowledge of construction, but should rely upon a fully-qualified surveyor, who should be compelled to take up a certificate from an institute upon whom all responsibility should rest, as no certificate should be given until satisfactory examinations have been passed both as regards construction and prices, the latter to be based on the cost of material and the necessary labour, not upon "I can get it done," without any knowledge of the "it."

Under such conditions an architect remains on good terms of friendship with his client, and would have time to fully develop the art of his profession. You will notice I do not mention any examination in art, as I think this impossible; but I feel the architect's future would depend upon the artistic treatment of his work, and upon this he would either rise to distinction or remain an unknown quantity.

The unqualified genius must remain as in other professions—outside the pale, or become the ghost, as he so often does now. The surveyor should be appointed by the architect and paid by the client, the "quantities" forming the basis of the contract. Of course, any action taken would be retrospective to a certain extent.

The author of the foregoing, perhaps quite unwittingly, has conceived of no new artistic genius, but, on the contrary, describes the practice of a small number of "architects" both in England and France. For instance, you are the friend or acquaintance of your client, and know just enough about the scientific two-thirds of your profession to enable you to converse with him thereon; you visit the works while in course of construction, if your other engagements permit, and you sign the certificates for payments to the contractor when the surveyor whom you are privileged to appoint tells you! You yourself, immersed in seas of drawing-paper, remain at home or in your office,

\* *Balzac en Pantoufles*, p. 30.

and sketch and colour elevations or perspective views as the divine afflatus with which you are invested may direct, conscious that your client's interests are safe in the charge of the surveyor you have appointed, whose "Quantities" are to form (though, under present circumstances, they do not) the basis of the contract to which your friend the client and a general contractor have subscribed their respective names. But, wisely enough, the member of the Institute of Builders who takes this rose-coloured view of the modern architect does not say how much the latter should be paid for his work, which would obviously be "the requisite preliminary sketches" mentioned in the first sub-clause of Clause 11 of the Schedule of Practice and Charges. The surveyor would do the rest of the items of that sub-clause, namely—the "drawings and specifications sufficient for an estimate and contract. Detailed drawings and instructions for execution." The surveyor would also superintend the works, and examine and pass the accounts. Is it not possible that, under such a division of labour, the "designing" architect might eventually find himself quite as much the obedient humble servant of the surveyor whom he appointed as is the general contractor with whom his client entered into an agreement? And is it not further possible that, in the present tendency to dispense with middlemen, the surveyor might soon find himself master-of-the-work? The London County Council have already got rid of one middleman in the shape of the general contractor; with the increase of education and the development of artistic feeling in this country, the client may also dispense with the other middleman, the architect-draughtsman. In 1888, nearly three years before the cry of "Architecture, an Art or a Profession?" came prominently before the Royal Institute of British Architects, Sir Richard Temple had said on his own responsibility, at a general meeting, when he read a Paper on Picturesque Architecture, that "in former ages the master-architects were artists first, then architects, then engineers"; but my friend of the Institute of Builders goes further than the ex-Governor of Bombay, for he would have an artist (who should belong to a close profession) make the preliminary sketches of a new building, and he would appoint a surveyor to be its architect. This, surely, is one of the last straws of the load of argument used in discussing the dubious query, whether Architecture be, or be not, only an art. My friend has convinced me, at least—which may be taken for what it is worth—that an architect, if he is to fulfil his duty to a client, must possess, not only a thorough knowledge of the arts of design and of the sciences pertaining to construction, but also of the business of building—for all and each of which he is paid, however inadequately, in the "five per cent. commission" he is entitled to receive from his client.



9, CONDUIT STREET, LONDON, W., 20 Sept. 1894.

The last of the Single Qualifying Examinations established in 1882 is to be held in November. After that, the recently inaugurated Progressive Examinations will come into full operation. All applicants for the Associateship who send in their papers after the 3rd November will be required (except in the case of practising architects and chief assistants, who may obtain certain exemptions by special resolution of the Council) to qualify, by passing three distinct examinations, for registration (1) as Probationer and (2) as Student; and (3) for candidature as Associate. Full particulars, given in the *Supplement* to this issue of the JOURNAL, are also advertised in the professional newspapers.

#### The Institute of New South Wales [pp. 545, 571].

The following are the officers of this Society for the year 1894-95:—President, Mr. J. Horbury Hunt [F.]; Vice-President, Mr. J. B. Barlow; Hon. Treasurer, Mr. James McDonald; Members of Council, Messrs. W. G. Coward [F.], T. Rowe [F.], W. Kenwood, Ambrose Thornley, Henry A. Wilshire; Hon. Secretary, J. J. Davey.

#### THE ARCHITECTURAL ASSOCIATION.

The following are the members of the Committee for the year 1894-95:—President, Mr. E. W. Mountford [F.]; Vice-Presidents, Messrs. F. G. F. Hooper [A.], and A. Beresford Pite [A.]; Messrs. John Begg [A.], W. D. Caröe, M.A., F.S.A. [F.], F. R. Farrow [F.], Owen Fleming [A.], E. S. Gale, Theo. Moore [A.], G. H. Fellowes Pryme [F.], W. H. Seth-Smith [F.], Paul Waterhouse, M.A. [A.], and Edmund Woodthorpe, M.A. [F.]; Hon. Treasurer, Mr. H. W. Pratt [F.]; Hon. Librarian, Mr. J. W. Stonhold [A.]; Hon. Secretaries, Messrs. F. T. W. Goldsmith [A.] and Banister F. Fletcher [A.].

#### SYLLABUS OF MEETINGS 1894-95.

The Ordinary and other General Meetings will be held in the rooms of the Royal Institute, 9 Conduit Street, W., at 7.30 p.m., as follows:—

Oct. 12.	Conversazione.	
" 26	Annual Meeting. President's Address . . . . .	Mr. E. W. Mountford.
Nov. 9.	The Study of Modern Architecture . . . . .	Mr. A. Beresford Pite.
" 23.	Sanitation in regard to Hospitals and Infirmarys . . . . .	Mr. Keith D. Young.
Dec. 7.	The Modern Theatre of the Continent . . . . .	Mr. E. O. Sachs.
1895.		
Jan. 4.	Architectural Illustration . . . . .	Mr. C. G. Harper.
" 18.	Bricks . . . . .	Mr. John Slater, B.A.
Feb. 1.	Architectural Perspective . . . . .	Mr. W. S. Weatherley.
" 15.	The Bridges of London architecturally considered, with Illustrations . . . . .	Mr. H. H. Statham.
	The use of Sculptural Decoration at the present time . . . . .	Mr. T. Stirling Lee.
Mar. 1.	Plaster work . . . . .	Mr. F. W. Pomeroy.
" 15.	Iron and Brass . . . . .	Mr. J. W. Singer.

Mar. 29.	Specifications, from a Builder's point of view . . .	Mr. Henry Holloway. (Holloway Bros.)
	Ditto, from an Architect's point of view . . .	Mr. E. C. Pinks.
April 26.	Painting and its relation to Architecture . . .	Mr. C. W. Whall.
May 3.	Members' Soirée.	
" 10.	Treillage . . .	Mr. John Belcher.
" "	Nomination of Officers.	
" 24.	The Influence of Architectural Style upon Design . .	Mr. Walter Crane.
" "	Election of Officers.	
" 31.	Annual Dinner.	

## THE LONDON COUNTY COUNCIL.

### Dwellings for expropriated Artificers.

At the Eighth International Congress of Hygiene and Demography, recently held at Budapest, a Paper was presented by Mr. Thomas Blashill [F.], on the Dwellings in Blocks built by the London Council "for persons of the 'Working Class who are displaced by the clearance of 'sanitary Areas.' This Paper, which sketches the history of 'The Housing of the Working Classes Act 1890,' and goes fully into the work done by the London Council under its provisions, will always be useful for reference, even without all the plans referred to therein. Two examples of these plans will be found on p. 219 *ante*. Mr. Blashill's Paper is as follows:—

For many years past it has been evident to all persons who have studied the condition of the poorer portion of the town population of England that great evils have been caused by the crowding of large numbers of inhabitants upon very small areas, and by the unwholesome condition of many of the houses in which such people live. Societies in the first instance were established by private individuals with the view of providing healthy dwellings at a moderate rent. The most important of these societies was founded in 1862, through the very large gifts and legacy of Mr. Peabody, a London merchant, and is named after him "The Peabody Trust." It was, however, felt that the subject was so important that it ought to be dealt with by the public authorities, and in the years 1868, 1875, 1879, 1882, and 1885 Acts of Parliament were passed with the object of clearing unhealthy areas and providing healthy dwellings for their inhabitants.

This group of Acts is known by the names of Mr. Torrens and of Mr. (now Viscount) Cross, who were chiefly instrumental in promoting this particular kind of legislation.

In the year 1890 the whole of these Acts of Parliament were consolidated under the name of "The Housing of the Working Classes Act 1890."

Under Part I. of the Act, the municipal authority charged with putting the Act into operation, upon being satisfied of the unhealthiness of a particular district, must make a scheme for its improvement, which scheme has to be confirmed by the Secretary of State for the Home Department. The practical effect of this Act, and the older Acts, has been to cause several municipal authorities to purchase the houses in many unhealthy districts and to provide new dwellings in those districts.

In the County of London, except the central portion which is the City, the municipal authority charged with this duty is the London County Council, which in the year 1889 succeeded to the powers and duties of the Metropolitan Board of Works.

During the time that these Acts of Parliament have been in operation the Metropolitan Board and the Council have caused the erection of a large number of buildings.

It was the habit of the Metropolitan Board to sell the land when it had been cleared of buildings to societies or to individuals, who became bound to erect dwellings to the

approval of the Board and of the Secretary of State. This mode was found very costly, and the London County Council determined to keep the land, and to pay for the dwellings built upon it. One of their objects was to prevent serious loss of money under the former system, but the main object was to keep full control over the erection and the management, so as to benefit the occupiers in a greater degree. The money borrowed to erect the dwellings that have been built will be paid off in fifty-five years, when the municipality will possess them free of encumbrance.

In this Paper I shall confine myself to the existing mode of carrying out the Act of Parliament of 1890, and to the particular class of dwellings that are now thought fittest for being erected under that Act.

As an illustration of the mode of dealing with an unhealthy district I present plans of the "Boundary Street" scheme, which deals with an area of fifteen acres in extent, in the parish of Bethnal Green, and involves the demolition of 728 houses, and the closing and removing of twenty streets. The whole of the fifteen acres will be entirely cleared of buildings with the exception of two churches, three elementary schools, and one large factory. It has been replanned on the radiating system of streets. A circular garden 270 feet in diameter will occupy the centre of the area, and from this seven avenues, varying from 50 to 60 feet in width, radiate, the buildings being arranged upon the intervening sites. Great care is being taken in the development of this area to render it a good example. This is the largest scheme that has been undertaken under these Acts of Parliament. Its object is, moreover, almost entirely confined to the provision of better dwellings, and it has not been to any material extent affected by the need for better and more direct thoroughfares—a matter which has largely influenced schemes of this kind.

Although this district is situated within one mile of the centre of the City of London, its inhabitants were of the poorest class, a whole family frequently living in a single room. The streets were narrow, the spaces at the backs of the houses were also narrow, and they had in many cases been made still worse by the erection of buildings used for trade and manufacture. The houses were old and dilapidated, the rooms were dark, dirty, and unwholesome, and the inhabitants were subject to the diseases resulting from these conditions. Many of the inhabitants were of a very low type, but many were of the honest working class. Alderman Flenning Williams, the Chairman of the Public Health and Housing Committee, has publicly said that those areas were not quarantine depots in which the sufferers could be isolated from the rest of the people. Living there were costermongers, machinists, market porters, toy makers, warehousemen, and others, who in a thousand ways spread throughout a healthy community the germs of disease and death.

For the four years ending 1889 the average mortality on this area exceeded 40 per 1,000, whereas the average mortality of the parish of Bethnal Green, in which this district is situated, was no more than 22·8 per 1,000. That of registration London for the same period was 18·8 per 1,000.

In the first of the group of Acts for the Housing of the Working Classes it was provided that the total number of persons turned out of unhealthy districts should be provided with dwellings upon land within the same district or in its vicinity; but it was soon discovered that this could not be done. By the Act of Parliament of 1890 the Home Secretary is empowered to sanction a scheme which provides dwellings for one-half the number of persons who will be turned out, and this is sometimes the largest number that can be provided for; but in the Boundary Street scheme new dwellings will be provided for 4,700 persons, the number turned out being 5,719.

#### NEW DWELLINGS.

The first consideration in the design of new buildings is as to the kind of dwellings that may reasonably be provided. It must be remembered that the municipal authority is

dealing with the poorest class, and therefore the dwellings provided should, as a rule, have the minimum amount of accommodation which is considered to be suitable for the residence of a family. The dwellings must be arranged upon comparatively small areas of ground. The Peabody Trust and the private societies that have been in existence for many years have provided dwellings in high buildings of from five to seven storeys in height. The general experience of these societies is that the rooms at the top of their dwellings let very easily at a very slightly reduced rent, or even at the same rent as the lower storeys. They are generally very much approved by their tenants. Objections have, however, been raised, chiefly by the medical officers and by persons who object to the climbing of a large number of stairs, to buildings of the height of six or seven storeys. The London County Council have for the present fixed the height of their buildings at five storeys, and as the distance of one building from the nearest building to it is fixed at the height of the higher of the two buildings, five storeys is in very many cases as much as could properly be provided upon the sites available.

I will limit myself to a description of the dwellings provided for families in the buildings now being finished or that are being designed for the London County Council, their design being largely founded upon a study of the most successful buildings that have been erected in London during recent years. It must be understood that these dwellings are not suggested as models of what a working-man's dwelling should be, but as being just sufficient for the accommodation of a family, the amount of rent that such a family can pay being insufficient to provide more accommodation. In the following description it must be understood that the number of persons (taking adults and children together) is estimated at two persons per room.

*Self-contained dwellings.*—The dwellings consist of one room, two rooms, three rooms, and four rooms respectively. Of these the one-room dwellings are very few; and it is my opinion that, except where they can be provided very conveniently, they need not be provided at all. A family of two persons can very readily find accommodation elsewhere. The chief need is for dwellings of two and three rooms, in which families of four and six persons can be accommodated.

Three-room dwellings are most required, because a family with four children has great difficulty in finding accommodation. It is probable that, for similar reasons, four-room dwellings would be useful; but the number of families having six children is not so large, the older children may be earning wages, and such a family may be able to take a small house.

There are certain qualities which family dwellings of the smallest class ought to have. These qualities must vary in different places. In London a self-contained dwelling should be entered directly from a wide passage or from the landing of the staircase. The stairs and landings should be at least 3 feet 6 inches wide. This entrance is, in fact, the outer door of a house.

The Council demand that all habitable rooms should be at least 8 feet 6 inches in height; the family living-room must have a floor measurement of at least 144 superficial feet clear of all fire-places and other solid obstructions; the bedrooms must measure at least 96 superficial feet; a small scullery with a sink, copper, and towel-roller must be attached to each living-room; and beyond the scullery there must be an open lobby through which access can be got to a w.c. The w.c. is thus entirely cut off from the house.

The fittings required for the living-room are a cooking-range, which may be 2 feet or a little more in width, and which must contain an oven and boiler. The range used in the Council's dwellings is the Cunliffe range, in which the oven is placed below the fire. There must be a ventilated food cupboard close to the outer wall, a coal-box and dresser, with two drawers and a pot-board underneath the

drawers on which to keep kitchen utensils; also three shelves on the upper part of the dresser. About half a dozen coat-hooks are fixed to a rail on the wall. There must be besides a cupboard for plates and other articles not of a perishable nature. No fittings of any kind are provided in the bedrooms, but there may be cases in which a cupboard can easily be provided.

It must be remembered that, according to the calculation of two persons per room, the room which is called the living-room must be used at night as a bedroom. It must therefore be so arranged that a convenient place can be found for putting a bed for two persons. Sometimes the parents sleep in this room, sometimes the children are put there, and in other cases the whole family may sleep in the bedrooms. The bedroom doors invariably communicate with the living-room, and are probably left open.

*Drainage and removal of refuse.*—Although the w.c.'s are separated from the house by an open lobby, great care has been taken to make the drainage practically perfect. The closets are of the type called "wash-down," solidly set in concrete; they are flushed with two gallons of water, but three gallons would be in many cases more effectual; the soil-pipes are taken outside the buildings; they are thoroughly ventilated so as to disconnect them from the sewers. The waste pipes from scullery sinks are treated on the same principle.

It is possible that dust-shoots will have to be provided so that the dust and dry refuse from each dwelling will be poured down these shoots; but it is hoped that the parish authorities may be induced to remove the dust in iron pails daily or at frequent intervals from each dwelling.

#### COST OF DWELLINGS, RENTS, AND OCCUPATION.

With regard to cost it has been the wish of the London County Council to provide these dwellings at the lowest possible rate, and, if possible, at such rates as the persons who have been turned out of the unwholesome dwellings could afford to pay. In some cases this object has been attained, in other cases it has not been possible to attain it. But there is another obstacle to letting these dwellings to the class of persons that have been turned out. In many cases the people have been so long accustomed to live in dirty rooms that they could not be induced to keep these rooms clean, nor would they desire to live in rooms of this class. In fact they very rarely apply for these dwellings, and as many months must elapse between the time when they are turned out of the unwholesome dwellings and the time the new dwellings are ready, they have generally succeeded in establishing themselves in other houses of a description somewhat similar to those they have lived in. The new dwellings are, however, always let to persons of the working class, and it is hoped that in the course of a few years the unwholesome dwellings will be entirely swept away.

The persons to whom the new dwellings are let usually earn about 21s. per week, which is the rate of wages usually earned by messengers, labourers, &c. The average cost of the Council's buildings containing dwellings is £80 per room, which is considerably more than artisans' dwellings built by private societies have cost during several years past. The cost of building has, however, very much increased within the last two or three years, and the old artisans' dwellings companies have for the present ceased to build. The London County Council are, however, able to expend more money than a private society can afford to spend for dwellings of a similar kind, because they can borrow money at 3 per cent.—which is a very low rate of interest.

*Associated dwellings.*—Upon consideration of the whole question, it is thought that the Council should in the future provide a considerable number of dwellings of a cheaper kind than those which they have hitherto built.

It will be remembered that the dwellings which I have described are "self-contained" or "complete" dwellings, having their own sculleries and w.c.'s, but those which I am about to describe are called "associated" dwellings.

In them each separate dwelling will generally consist of a living-room with one bedroom, or a living-room with two bedrooms; but it is probable that a few single-room dwellings may be provided, and it may be convenient in special cases to attach three bedrooms to a living-room.

In these buildings there will be a common scullery for the use of all the dwellings on one floor. In this scullery a sufficient number of sinks will be provided, and from it the w.c.'s for women and young children will be approached; w.c.'s for men will be provided in another place. All these are shown upon the drawings.

It will be possible to provide facilities for washing clothes in connection with the common sculleries, or in wash-houses built upon the tops of these dwellings; but no decision upon this point has been arrived at, and it is possible that a laundry may be built in a central position upon the Boundary Street area for the use of the whole of the dwellings. In that case no arrangements for washing clothes will be provided in any other dwellings that may in future be built upon this area. — THOS. BLASHILL.

## LEGAL.

### District Surveyor's Requisition — Non-compliance.

LEGG F. SILK.

A similar point to that decided in *Wallon v. Lister*, the judgment in which will be found reported verbatim at page 411, came before Mr. Haden Corser at the North London Police Court on the 7th inst. Mr. George Legg F., district surveyor for Hackney, being the plaintiff, and Messrs. Silk & Son, builders, of High Street, Hornerton, defendants. According to the *Law Journal* the defendants were summoned "for that they did, contrary to the Metropolitan Building Act 1855, ss. 38, 41, cut into the party-wall between Nos. 413 and 415 Mare Street, Hackney, by inserting a rain-water pipe without previously giving notice to the district surveyor." Further, the summons charged the defendants with omitting to open up the work for the inspection of the district surveyor, as required by section 45 of the Act.

Mr. W. E. Windsor defended, and raised the preliminary objection that two offences were named in the one summons.

Mr. Haden Corser said that one offence must be omitted, and Mr. Legg said that he would withdraw that part relating to the notice, as the other matter was more important. The Act gave him power to order the opening up of the work, and the defendants had put him off and failed to comply with his notice. On June 14 he discovered men at work under the defendants' direction cutting into the party-wall between the two houses and inserting drain-pipes. He complained that he had received no notice of the work. Next day the defendants sent him notice. Witness then demanded plans. A few days after he inspected the place again and found that the bricks had been reinstated. He told the defendants to open the wall. They said they would have to get the consent of the owner. Then, after saying that the wall should be opened, and making an appointment, they said that the owner would not give his consent, and since then the witness had been unable to inspect what had been done.

Mr. Windsor: You gave the defendants forty-eight hours' notice to open the work directly you discovered the irregularity, and yet you wait nearly three months before you come to this court and ask the magistrate to enforce it by fining the defendants £20. In the meantime the defendants have left the premises, and have no control whatever over them. Mr. Windsor referred to the case of *Smith v. Legg*,\* in which a decision of Mr. Haden Corser in favour

of the district surveyor in similar circumstances had been reversed by the Queen's Bench Division.

Mr. Haden Corser thought that that case governed the present one. The Queen's Bench Division had decided that if the work had been completed the district surveyor had no remedy.

Mr. Windsor: It decided that the district surveyor must be always on the alert to discover an irregularity and nip it in the bud.

Mr. Haden Corser: A thousand district surveyors could not do that. In my opinion this decision places a premium on law-breaking. All that a builder has to do where there is an irregularity is to keep quiet until the work is completed, and then the district surveyor has no remedy.

Mr. Windsor: But the district surveyor is protected by the section imposing a penalty of £20 for not giving notice, and Mr. Legg has elected to withdraw that part of the summons.

Mr. Haden Corser: It is an omission in the law that must be remedied. I must dismiss the summons.

Under the new London Building Act 1894, which has received the Royal Assent and comes into force on January 1, 1895, provision is made for cases where the builder has left the building on which an irregularity under the Act has been committed; so that the life of the cases above referred to will not be long.

### The Building Line.

The *Law Journal*, commenting upon the recent decision of Mr. Justice Mathew and Mr. Justice Kennedy in *Thorold v. The North Ormesby Local Board*, reported in these columns at p. 631, observes upon the difficulty of getting at the true inwardness of the Public Health (Buildings in Streets) Act 1888. Section 3 of that Act, which superseded section 157 of the Act of 1875, causes much perplexity when old lanes or highways, with few or no buildings on either side, are in process of conversion into streets in the ordinary sense, such as are contemplated by section 157 of the Act of 1875 (*Robinson v. The Barton Local Board*, 50 Law J. Rep. Chanc. 226; L. R. 8 App. Cas. 798). It has therefore caused a good deal of litigation, and the tendency of the decisions is to restrict its operation so as not unduly to affect the rights of building owners or place their land *extra commercium*. In *The Rarensthorpe Local Board v. Hinchcliffe*, 59 Law J. Rep. M. C. 19; L. R. 24 Q. B. Div. 168, it was decided that the section did not apply where the house or building on either side was merely begun and its walls had not been raised to any substantial height. In *The Attorney-General v. Edwards*, L. R. (1891) 1 Chanc. 194, a somewhat special case, Mr. Justice Romer appears to have regarded a public institution as not being a building to the line of which a building owner must conform; and now, in *Thorold v. The North Ormesby Local Board* ante, p. 631, Mr. Justice Mathew and Mr. Justice Kennedy seem to have held that section 3 does not apply unless there is a continuous line of building. In that case the appellant had built himself a house in a lane on the side hitherto unbuilt upon, and had sent in plans for a row of cottages on the same side as his house, but ninety yards distant. The local authority rejected his plans for the cottages, purporting to act under section 3, but the Court held this rejection, under the circumstances, to be mere caprice, and issued the *mandamus* to approve the plans. The decision does not purport to affect cases where a regular laying-out of ground for building purposes is undertaken, nor to decide what constitutes "laying-out"; and it must also be acted upon subject to section 157 of the Act of 1875 and by-laws as to new streets thereunder, for it may be feasible for a local authority to prevent houses being built on land which falls within the prescribed width of a new street, even when it is impossible to prescribe the position of the houses by reference to adjoining buildings.

\* *The R.I.B.A. Journal*, Vol. IX, N.S. 192, 228.



